ACTIVITY BASED SAMPLING SUMMARY REPORT

PUBLIC RECEPTORS

LIBBY, MONTANA OPERABLE UNIT 6
LIBBY, MONTANA

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EXECUTIVE SUMMARY

The following document has been prepared to summarize the methods used and results of an Activity Based Sampling (ABS) event conducted in September 2008 at the request of the U.S. Environmental Protection Agency (EPA).

The ABS event was designed to evaluate potential exposure to two populations: BNSF Railway Company (BNSF) Maintenance of Way (MOW) Workers (Worker) and the general public (Public). This report will focus on the sampling and results conducted for the evaluation of the Public. Discussions of the sampling and results from the Worker assessment will be published under separate cover.

INTRODUCTION

The Libby asbestos site has been on the National Priorities List since 2002 and encompasses the towns of Libby and Troy, Montana, the former W.R. Grace mine-site and several other Operable Units (OU). Property owned by the BNSF Railway Company (BNSF) has been designated OU6 and is defined geographically by the BNSF property boundaries and extent of contamination associated with the railyard and other Right of Way (ROW). Generally OU6 is as wide as the ROW (CDM, 2008) with the western and eastern limits being defined by limits of OU7 and OU4, respectively (Figure 1).

In preparation for the 2008 ABS event the following documents were prepared to govern the sampling, analysis and safety aspects of the project:

- Public Receptor Sampling and Analysis Plan (Public SAP) (AECOM, 2008a);
- Worker Receptor Sampling and Analysis Plan (Worker SAP) (AECOM, 2008b);
- Project-specific Health and Safety Plan (HSP) (EMR, 2008); and
- SAP analytical summaries.

Collectively these documents served to provide guidance in the collection and analysis of samples and to govern health and safety procedures. The focus of this report will be methods and procedures defined in the Public SAP.

SAMPLING AND ANALYTICAL

Air and soil matrices were sampled during the Public portion of the ABS event. Personal air samples were collected from 2 different populations to evaluate the potential exposure risk of: 1) simulated Pedestrian Trespassers; and 2) simulated On-looker Trespassers. Stationary air samples were collected to monitor ambient air quality near the BNSF property boundaries. Soils were evaluated for visible vermiculite and laboratory samples collected to determine the magnitude of any soil impacts. Camp, Dresser and McKey (CDM) personnel provided sampling oversight on behalf of the EPA.





All air samples were submitted to CDM for analysis by EMSL Analytical, Inc. (EMSL) utilizing ISO 10312 methods. Soil samples were also submitted to CDM for preparation and eventual analysis by EMSL using Polarized Light Microscopy (PLM) Visual Estimation (VE) and PLM-Gravimetric methods for fine and coarse fractions, respectively.

RESULTS

A total of 22 stationary air samples and two (2) duplicates were collected and submitted for laboratory analysis. All samples met the target analytical sensitivity of 0.0024 structures/cubic centimeter. All samples were non-detect for Libby Amphibole (LA), Other Amphibole (OA) and Chrysotile.

A total of 7 simulated onlooker trespasser and 14 simulated pedestrian trespasser scenario air samples were collected during the seven day sampling event. All samples met the target analytical sensitivity. All simulated trespasser scenario air samples were non-detect.

A total of 8 blank samples were collected and submitted for analysis. Three of the blanks were not analyzed at the discretion of EMSL and were archived. All of the blanks were non-detect.

A total of 62 soil samples were collected and contained a fine fraction, which were analyzed via PLM-VE methods. A total of 18 QA/QC samples were prepared by CDM and submitted for PLM-VE analysis. All fine fraction samples, with the exception of RR-00022 and RR-00025, were non-detect for LA, OA and Chrysotile. Samples RR-00022 and RR-00025 contained 0.1% LA and were found in bin B1. Both samples were collected within the limits of the Kootenai Falls siding at BNSF MP 1331.5 (RR-00022) and MP 1331 (RR-00025).

Fifty (50) soil samples had a coarse fraction that was analyzed via PLM-Gravimetric methods. Additionally, 8 QA/QC samples were prepared by CDM and submitted for analysis. All samples were non-detect for LA, OA and Chrysotile.



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LIST OF ACRONYMS

ABS - Activity Based Sampling

BNSF - BNSF Railway Company

C – Chrysotile

CDM - Camp, Dresser and McKee

DGPS - Differential Geographic Positioning System

EMSL - EMSL Analytical, Inc

EPA – U.S. Environmental Protection Agency

FCO - Field Change Order

FSDS - Field Sampling Data Sheets

HSP - Health and Safety Plan

ISO – International Organization for Standardization

L/m – Liters per minute

LA - Libby Amphibole

MCE - Mixed Cellulose Ester

MP - Mile Post

NIOSH - National Institute for Occupational Safety and Health

OA – Other Amphibole

OU - Operable Unit

PCM – Phase Contrast Microscopy

PLM -VE - Polarized Light Microscopy - Visual Area Estimation

PLM-Grav - Polarized Light Microscopy - Gravimetric

PPE - Personal Protective Equipment

QA/QC - Quality Assurance/Quality Control

ROW - Right of Way

s/cc – Structures per cubic centimeter

SAP - Sampling and Analysis Plan

SOP - Standard Operating Procedure

TEM - Transmission Electron Microscopy

UTM - Universal Trans Mercator



1.0 SITE LOCATION

The Libby asbestos site has been on the National Priorities List since 2002 and encompasses the towns of Libby and Troy, Montana, the former W.R. Grace mine-site and several other Operable Units (OU). Property owned by the BNSF Railway Company (BNSF) has been designated OU6 and is defined geographically by the BNSF property boundaries and extent of contamination associated with the railyard and other Right of Way (ROW).

In general, OU6 is as wide as the ROW (CDM, 2007). Although no formal geographic boundaries have been established for the western or eastern limits of OU6, EPA's agent, Camp, Dresser and McKee (CDM) has used the limits of OU4 to define the east side boundary and the limits of OU7 defined the west side boundary (Figure 1) (CDM, 2007). These limits roughly correlate to BNSF Mile Post (MP) 1301.5 on the east to MP 1342 on the west (Figure 2).

OU6 is encompassed by BNSF's Kootenai River Subdivision that extends westward from Whitefish, Montana to Sandpoint, Idaho. Approximately 40 trains per day pass over the Kootenai River Subdivision. The portion of the Kootenai River subdivision within OU6 is single track with passing sidings that allow the passing of trains traveling in opposite directions. Passing sidings within OU6 are located at following locations (from east to west) (Figure 2):

- Riverview (MP 1306.9)
- Ripley (MP 1312.2)
- Libby (MP 1319.6)
- Kootenai Falls (MP 1331.3)
- Troy (MP 1337.9)

Two small railyards are present at Libby and Troy (Figure 2) and an industrial spur is present at the east end of Libby. From MP 1301.5 to approximately 1307.5 the BNSF ROW parallels Fisher River and then follows the Kootenai River from approximately MP 1307.5 to the west end of OU6 (Figure 2).



2.0 ABS PREPARATION

2.1 ABS Docments

In preparation for the 2008 Activity Based Sampling (ABS) event, a series of documents were prepared to govern the sampling, analysis and safety aspects of the project. The following is a brief description of purpose of each document that pertains to the Public Receptor portion of the ABS event.

2.1.1 PUBLIC RECEPTOR SAMPLING AND ANALYSIS PLAN

The Public Receptor Sampling and Analysis Plan (Public SAP) (AECOM, September 2008b) detailed the methods and procedures that were utilized during stationary air, simulated trespasser personal air and soil sampling. The Public SAP addressed public receptors that may be exposed to LA in air as a result of BNSF rail maintenance activities. Public receptors identified in the Public SAP included two simulated trespasser scenarios and near-by residents.

2.1.2 HEALTH AND SAFETY PLAN

A project-specific Health and Safety Plan (HSP) was developed to cover safety and Personal Protective Equipment (PPE) issues for personnel involved with the sampling activities (EMR, 2008). The HSP was not developed as a site specific plan since the work sites would be changing daily. In addition to the HSP, all sampling personnel attended daily BNSF safety briefing that included job specific details including planned work activities, area specific hazards and weather forecasts.

2.1.3 SAP ANALYTICAL SUMMARIES

A SAP analytical summary was developed for samples collected during the Public portion of the ABS. The analytical summary was approved by the EPA, EPA agents and contracted laboratories. The purpose of the analytical summary was to condense the analytical parameters specified in the Public SAP into an easily referenced guide for laboratory analysis of each matrix-specific sample group (i.e. personal air, stationary air and soil samples). The approved Public Receptor analytical summary is included in Appendix A.

2.2 Site Specfic Procedures

Prior to initiating ABS sampling, EMR field staff received training from CDM related to visual estimation vermiculite concentrations in soils, soil sampling procedures and Field Sample Data Sheet (FSDS) procedures that are specific to the Libby Superfund Site. The visual estimation of vermiculite concentration training followed the procedures outlined in Standard Operating Procedure (SOP) CDM-Libby-06, Revision 1 – Semi-Quantitative Visual Estimation of,



Vermiculite in Soils at Residential and Commercial Properties (CDM, 2007). Soil sampling procedures followed SOP CDM-LIBBY-05, Revision 2 – Soil Sample Collection at Residential and Commercial Properties (CDM, undated). The FSDS training did not follow a specific SOP, but rather focused on the Libby-specific procedures to be followed for completion of FSDS forms and the submission of air and soil samples for analysis.

2.3 Sampling Methods and Equipment

The following is a discussion of the methods and equipment used during ABS to collect each sample media.

2.3.1 PERSONAL AIR SAMPLES

Personal air samples were collected for this portion of the ABS event to evaluate air quality for simulated trespasser scenarios. Three trespasser scenario air samples were collected each day of the sampling event. Personal air samples were collected using Gillian BDX II personal air pumps equipped with Zefon 25mm Phase Contrast Microscopy (PCM) cassettes with 0.8 µm Mixed Cellulose Ester (MCE) filters. Personal air samples were collected at flow rates that ranged between 1.4 Liters/minute (L/m) and 2.8 L/m, as determined by testing with a calibrated rotameter at the beginning and ending of the day. These cassettes were utilized for both PCM analysis by National Institute for Occupational Safety and Health (NIOSH) Method 7400 and Transmission Electron Microscopy (TEM) analysis by the International Organization for Standardization (ISO) Method 10312. All personal air samples requiring fixed laboratory analysis were submitted to CDM for analysis by EMSL Analytical, Inc (EMSL). Copies of the FSDSs for the Public Receptor personal air samples are found in Appendix B.

2.3.2 STATIONARY AIR SAMPLES

Stationary air samples were collected to evaluate air quality near the BNSF property boundary. Stationary air samples were collected using EMS Megalite high-volume air pumps equipped with Zefon 25mm PCM cassettes with 0.8 µm MCE filters. The filters were suspended approximately 4 feet above ground surface with the filter opening facing downward to prevent the deposition of foreign material on the filter. Stationary air pumps were checked and adjusted daily to achieve a flow rate of 7.6 L/m as determined with a calibrated rotameter. All stationary air samples were submitted to EMSL via CDM for TEM analysis via ISO 10312 methods. Copies of the FSDSs for stationary air samples are found in Appendix B.

Air sample field blanks were collected on a daily basis and submitted for analysis. In addition, two duplicate stationary samples (BA-00064 and BA-00068) were collected to evaluate laboratory accuracy.



2.3.3 SOIL SAMPLE COLLECTION

Discrete soil samples were collected from up to 15 locations per work area. The soil samples were collected to determine whether LA was present in exposed soils adjacent to the work areas. A stainless steel trowel was used to loosen and collect approximately 1 kilogram of soil between the ground surface and a depths between 4 inches and 6 inches. The samples were placed and submitted in one-gallon re-sealable plastic bags. The samples were labeled with a unique, pre-printed identification label established by CDM and cross-referenced with an identical identification label on the FSDS. The sample bag was placed inside a second labeled, re-sealable plastic bag.

The trowel used to collect soil samples was decontaminated between each sampling location and transported between sampling locations in a sealed zip-lock bag. The decontamination procedures used during the ABS differed slightly from those specified in the Public SAP and are discussed in section 6.2.

Each soil sample location was marked using high visibility survey tape to ensure that the sample locations could be found during Differential Geographic Positioning System (DGPS) surveying. Soil samples were submitted to CDM for separation and preparation before being shipped to the EMSL Libby, Montana laboratory for analysis. Following preparation by CDM, the samples were transported to EMSL for analysis via Polarized Light Microscopy Visual Area Estimation (PLM-VE) and PLM-Gravimetric (PLM-Grav) methods. Additional discussion of the soil analysis process is found in Section 4.1.3. Copies of the FSDSs for the soil samples are found in Appendix C.

During sample collection, the soils were evaluated for the presence of vermiculite using semiquantitative methods referenced in Section 3.2. The purpose of estimation of visible vermiculite soil is to assist in the identification and delineation of visible vermiculite in soils without the collection of significant numbers of laboratory samples. During ABS visual estimation was incorporated to follow EPA standard operating procedures, but was not used as a substitute for laboratory analysis or to delineate the extent of visible vermiculite in soils.

All soil sampling locations were assigned a semi-quantitative estimate of visible vermiculite and categorized as none, low, medium (intermediate) or high according to the following criteria (CDM, 2007):

- None no visible vermiculite
- Low a maximum of a few flakes per sample location
- Medium (Intermediate) Vermiculite easily observed throughout the sample location, including the surface.
- High Vermiculite easily observed throughout the sample location, including the surface.



It should be noted that the description of the medium and high categories are identical in the reference document (CDM, 2007).

The results of the semi-quantitative estimation are discussed in Section 7.0.

2.3.4 METEOROLOGICAL DATA

On-site and local meteorological data was collected on a daily basis during the ABS event. Onsite meteorological data was collected using a Met One AutoMet 3 data station and logging system. The station observed and recorded the following meteorological parameters:

- Barometric pressure (serial number U3918);
- Relative humidity and temperature (serial number U3209);
- Rainfall (serial number P8153);
- Wind speed and direction (serial number W3817)
- Datalogger (serial number F2211)

All the sensors were factory calibrated in September, 2008. The data logger was programmed to read all parameters at 30 second intervals. On-site meteorological data is presented in Appendix D.

2.3.5 LOCATION DATA

The Universal Trans Mercator (UTM) coordinates for soil sample, stationary air sample and meteorological station locations were determined using a Trimble Model GeoXH Differential Global Positioning System (DGPS) with sub-meter accuracy. This geospatial data was imported into Arc GIS to accurately locate the sample locations presented in Figures 4 through 10.



3.0 DOCUMENTATION PROGRAM

3.1 Field Notes

Two sets of field notes were collected by EMR personnel, one maintained by the soil sampling crew while the other was maintained by personnel outside the work area. These notes apply to both the Worker and Public Receptor portions of the ABS event and contain details regarding general field conditions, sample location information, soil descriptions, and timing of work completed. All notes were kept in bound field books and copies are found in Appendix E.

3.2 Field Sample Data Sheets

Information for each sample collected was logged on one of three types FSDSs that were provided by CDM: 1) personal air samples; 2) stationary air samples; and 3) soil samples. FSDSs were completed by EMR personnel using CDM-assigned sample numbering labels as well as sample specific data. Personal and stationary air sample FSDSs are found in Appendix B and soil sample FSDSs are found in Appendix C.

3.3 Meteorological Data

On-site meteorological data was collected on a daily basis during the ABS event as described in 3.3.4. Additionally, local meteorological data was downloaded daily from the USDA Forest Service Fire Weather Forecasting Station LBBM8, which is located on the southwest side of Libby, Montana. Both on-site and local meteorological data was uploaded daily to a field computer and backed up on an external hard drive. All meteorological data is presented in Appendix D.



4.0 SAMPLE ANALYSIS

4.1 Analytical Methods

All samples collected as part of the ABS event were submitted to the CDM Libby, Montana office. Upon approval of the analytical summary sheets, CDM generated chain of custody forms and submitted all air matrix samples to EMSL's Libby, Montana laboratory. All soil samples were submitted to CDM's Denver facility for preparation and then forwarded to EMSL for analysis. The following is a brief discussion of the analytical methods used in the analysis of the ABS samples.

4.1.1TEM ANALYSIS

Worker, simulated trespasser and stationary air samples were submitted for TEM analysis using the ISO 10312 methodology. This method determines and counts the type(s) of asbestos structure present, but sometimes cannot discriminate between individual fibers of amphibole and non-asbestos analogues of the same amphibole mineral. The method categorizes structures of various lengths and widths into "bins" to count the various fractions of LA, OA and Chrysotile (C). The method specifies six bins that are characterized as follows:

- Bin A: All LA, OA and C fibers with a length to width aspect ratio less than 5:1;
- Bin B: All LA, OA and C fibers with a length to width aspect ratio greater than or equal to 5:1 and length less than 0.5 µm;
- Bin C: All LA, OA and C fibers with an a length to width aspect ratio greater than or equal to 5:1 and width less than or equal to 0.5 µm;
- Bin D: All LA, OA and C fibers with a length to width aspect ratio greater than or equal to 5:1, with fiber length between 0.5 μm and 5 μm;
- Bin E: All LA, OA and C fibers with a length to width aspect ratio greater than or equal to 5:1, length between 5 and 10 microns and width less than or equal to 0.5 µm; and
- Bin F: All LA, OA and C fibers with a length to width aspect ratio greater than or equal to 5:1, length greater than 10 μm and width less than or equal to 0.5 μm.

Results are expressed in units of structures per cubic centimeter (s/cc) (Table 1).

All air samples collected as part of the Public portion of the ABS event were directly prepared.

4.1.2 PLM-VE/PLM-GRAVIMETRIC ANALYSIS

Samples of soil and soil-like materials collected as part of the Libby Superfund Site are prepared by CDM for analysis of LA by separation of coarse fraction and fine fraction materials using a ¼-inch sieve. Coarse fraction materials (greater than ¼-inch in diameter) are retained during sieving and fine fraction materials (less than ¼-inch in diameter) pass through the sieve. Each of these fractions is then analyzed for LA as follows (USEPA, 2008):





- The coarse fraction is analyzed using stereomicroscopy and Polarized Light Microscopy (PLM) to identify coarse particles that are asbestos, and estimating the mass percent by weighing those asbestos particles gravimetrically.
- The fine fraction is ground to less than or equal to 250 µm particle size and is evaluated by PLM-VE to estimate the mass fraction for LA using site-specific reference material as a frame of reference.

Soil results are expressed in % mass in Tables 2 and 3.



5.0 SAMPLING PROGRAM

5.1 Sampling Areas

EMR personnel consulted with the BNSF RP-15 and RP-21 Roadmasters on a daily basis to determine the planned activities and the exact work area in which sampling would take place. The work areas moved daily and sampling areas were dependent on several factors including the following:

- Maintenance Project Duration projects that would be completed in less than 3 hours were not targeted for soil or stationary air sampling since the job duration would be of insufficient length to collect an acceptable volume of air;
- Work Site Accessibility remote projects were excluded since equipment needed for sampling had to be carried to the work site;
- Planned Maintenance Activities sampling was biased towards maintenance activities
 associated with wooden ties due to the more invasive nature of the work. However a
 mixture of wood and concrete tie work was sampled to determine potential exposures for
 both sets of activities.

5.2 Deviations from SAP

The ABS event was conducted in accordance with the procedures described in the Public SAPs except when field conditions warranted a deviation. The following is a discussion of deviations from the SAPs that were incorporated into the sampling process based on field conditions. All deviations were documented on Field Change Order (FCO) forms, which are found in Appendix F. Many of the deviations resulted from determining actual field conditions versus those speculated during the SAP development.

- FCO #17-1: A flow rate of 5 L/m could not be achieved with the personal pumps. Reduced flow rates increased the duration of sampling events from 4 hours to 8 hours.
- FCO #17-2: The SAP specified the collection of samples from two on-looker trespassers. Due to personnel limitations only one on-looker trespasser was sampled.
- FCO #17-3: The SAP assumed that no train traffic would pass through the sampling area. On day 1 train traffic was allowed to pass through the sampling area during maintenance and sampling activities. All subsequent trains passing through the sampling area were recorded in the field book.
- FCO #17-4: The SAP specified that the simulated pedestrian trespasser would be sampled away from maintenance activities. Due to manpower limitations the simulated pedestrian trespassers spent the majority of the sampling period in areas where maintenance activity was occurring.
- FCO #17-5: The SAP specified that composite soil samples would be collected and sampling equipment would be wrapped in tin foil between sample locations. Discrete soil samples were collected and sampling equipment was decontaminated between sample locations, dried and placed in a clean zip-lock bag.



- FCO #17-6: Worker sampling event duration is variable and is not under the control of the sampling team. The SAP called for maximum sample duration of 4 hours for workers. Pumps were placed on workers at the beginning of a shift and retrieved at the end of the shift. The increased duration may result in filter overloading.
- FCO #18-1: The Day 2 maintenance area was shorter than Day 1 and less area had exposed soil. The number of soil samples was reduced from 15 to 9 due to reduced track protection time and the lack of exposed soil.
- FCO #18-2: Assessed and reduced worker air sample flow rate from 2.8L/m to 1.0 L/m to reduce filter overloading.
- FCO #18-3: Day 1 field setting was extremely dry and significant dust was created by vehicles passing through the sampling area on an adjacent access road. Day 2 conditions featured the same soil moisture conditions but overall dust levels were lower since this site did not have an access road.
- FCO #19-1: Scheduled maintenance was less than 1,000 feet in length with an expected duration of 2 to 3 hours. The sampling plan was modified to account for the short length and duration.
- FCO #22-1: The SAP called for a suspension of work during precipitation events. The SAP was modified to continue sampling during the light to moderate rainfall event that occurred this day.

Since the FCOs represent actual field conditions, these deviations will likely be incorporated into future ABS events and SAP revisions.

5.3 Personal Air Sampling

Two potential public receptor exposure scenarios were evaluated with personal air sampling techniques. The public receptor scenarios consisted of: 1) simulated pedestrian trespassers; and 2) simulated on-looker trespasser and are discussed below. All personal air samples were collected using the equipment and procedures described in Section 3.3.1. The collection locations of personal air samples are not depicted on Figures 4-10 since the sampled personnel were not stationary.

5.3.1 SIMULATED PEDESTRIAN TRESSPASSER SAMPLING

Two personal air samples were collected each work day to evaluate the potential exposure of two simulated trespassers walking single file down the BNSF right-of-way (ROW). As stated in Section 6.2, this scenario was outlined in the SAP to be executed outside of the maintenance work zone. Due to personnel limitations these samples were collected from the breathing zone of EMR personnel that spent considerable time within the maintenance work zone and were tasked with soil sample collection.

5.3.2 SIMULATED ON-LOOKER TRESPASSER SAMPLING

One personal air sample was collected each work day to evaluate the potential exposure of a single simulated trespasser observing the maintenance activities from BNSF property but not on





the immediate ROW. These samples were collected from the breathing zone of EMR personnel that spent the majority of their time outside the maintenance work zone.

5.4 Stationary Air Sampling

Stationary air sampling was done to assess potential exposure to airborne asbestos fibers originating from rail maintenance activities and migrating off the immediate ROW. A total of 2 to 4 stationary air samples were collected each sampling day with the number of samples being dependent on the length of the work area. The stationary air samples were placed within the maintenance work zone on both sides of the mainline to evaluate air both upwind and downwind air quality. Stationary air sampling locations where four (4) air samples were collected, the samples were laid out in a rectangular pattern measuring approximately 75 feet by 100 feet with the long axis of the rectangle being parallel to the tracks. In areas where only two (2) stationary air samples were collected, one (1) sample was collected from both sides of the tracks. Stationary air sample locations are depicted on Figures 4 through 10.

5.5 Soil Sampling

Discrete soil samples locations were evenly spaced at intervals that ranged from approximately 40 to 320 feet. The spacing was dependant on the length of the work area and the availability of exposed soil. Areas that did not have exposed soil (i.e. covered with ballast) were not sampled. Soil samples were collected from the soil surface nearest the track on which the work was occurring. Soil samples were collected from one side or both sides of the track depending on the track configuration and availability of exposed soil. Soil sample locations are depicted on Figures 4 through 10.

5.6 Sample Identification Numbers

All samples were assigned a unique sample identification consisting of a prefix followed by a five digit number that signify the order in which the samples were collected. All sample identifications were pre-assigned by CDM. Air samples were designated by a BA prefix while soil samples were designated by a RR prefix. The Location IDs used during the collection of both air (AD-005568) and soil samples (SP-138460) were also assigned by CDM.



6.0 SAMPLING SUMMARY

The following is a discussion of the work areas and daily sampling activities that occurred during the Public Receptor portion of the ABS event. The following discussion contains gaps in the personal air sampling numbering since additional samples were collected during the Worker Receptor portion of the ABS event. The results of this sampling are discussed under separate cover in the *Activity Based Sampling Summary Report – Worker Receptors* (EMR, 2010).

6.1 September 17, 2008

Sampling focused on RP-15 that was relaying approximately 2,000 feet of rail on wood ties at MP 1312, approximately 7.5 miles east of Libby (Figure 3).

The following samples were collected:

- Two (2) simulated pedestrian trespasser personal air samples BA-00003 and BA-00004;
- One (1) simulated on-looker trespasser personal air sample BA-00005;
- Four (4) stationary air samples BA-00006 through BA-00009;
- One (1) air sample blank BA-00010;
- Fifteen (15) soil samples RR-00001 through RR-00015.

No visible vermiculite was observed in soil samples RR-00001, RR-00006 through RR-00008, RR-00013 and RR-00015. The remaining nine (9) soil samples were classified as containing low amounts of vermiculite (Table 2). Stationary air and soil sampling locations are depicted on Figure 4.

6.2 September 18, 2008

Sampling focused on RP-15 that was replacing approximately 2,900 feet of rail on wooden ties at Kootenai Falls Siding (MP 1331.5). This work site was approximately 12½ miles west of Libby (Figure 3).

The following samples were collected:

- Two (2) simulated pedestrian trespasser personal air samples BA-00013 and BA-00014;
- One (1) simulated on-looker trespasser personal air sample BA-00015;
- Four (4) stationary air samples BA-00016 through BA-00019;
- One (1) air sample blank BA-00020;
- Eight (8) soil samples RR-00016 through RR-00023.



No visible vermiculite was observed in soil samples RR-00016 through RR-00019. Low concentrations of visible vermiculite were observed in soil samples RR-00020 through RR-00023 (Table 2). Stationary air and soil sampling locations are depicted on Figure 7.

6.3 September 19, 2008

Sampling focused on RP-15 that replaced 610 feet of rail on wooden ties at Kootenai Falls Siding (MP 1331). This work site was approximately 12 miles west of Libby (Figure 3).

The following samples were collected:

- Two (2) simulated pedestrian trespasser personal air samples BA-00023 and BA-00024;
- One (1) simulated on-looker trespasser personal air sample BA-00025;
- Two (2) stationary air samples BA-00026 and BA-00028;
- One (1) air sample blank BA-00027;
- Six (6) soil samples RR-00025 through RR-00030

The number of stationary air samples and soil samples was reduced on this site due to the short length of the project. No visible vermiculite was observed in any of the soil samples (Table 2). Stationary air and soil sampling locations are depicted on Figure 6.

6.4 September 22, 2008

Sampling focused on RP-15 that replaced 1,400 feet of rail on wooden ties east of Kootenai Falls Siding (MP 1329.5). This work site was approximately 10 miles west of Libby (Figure 3).

The following samples were collected:

- One (1) simulated on-looker trespasser personal air sample BA-00031;
- Two (2) simulated pedestrian trespasser personal air samples BA-00032 and BA-00033;
- Two (2) stationary air samples BA-00034 and BA-00035;
- One (1) air sample blank BA-00036;
- Eight (8) soil samples RR-00031 through RR-00038.

Visible vermiculite was observed in only one soil sample (RR-00036) and was classified as low concentration (Table 2). Stationary air and soil sampling locations are depicted on Figure 5.

6.5 September 23, 2008

Sampling focused on RP-21 that replaced 1,000 feet of rail on concrete ties at the east end of Troy (MP 1337). This work site was approximately 1 mile east of Troy (Figure 3).



The following samples were collected:

- One (1) simulated on-looker trespasser personal air sample BA-00039;
- Two (2) simulated pedestrian trespasser personal air samples BA-00040 and BA-00041;
- Two (2) stationary air samples BA-00044 and BA-00045;
- One (1) air sample blank BA-00046;
- Eight (8) soil samples RR-00039 through RR-00046.

No visible vermiculite was observed in soil sample RR-00040. However, visible vermiculite was observed in soil samples RR-00039, RR-00041 through RR-00045 and were classified as low concentration. Additionally, soil sample RR-00046 contained visible vermiculite and was classified as medium concentration (Table 2). Stationary air and soil sampling locations are depicted on Figure 8.

6.6 September 24, 2008

Sampling focused on RP-21 that replaced 1,300 feet of rail on concrete ties at the east end of the BNSF Troy yard (MP 1339.5). This work site was approximately 1.5 miles west of Troy (Figure 9).

The following samples were collected:

- One (1) simulated on-looker trespasser personal air sample BA-00049;
- Two (2) simulated pedestrian trespasser personal air samples BA-00050 and BA-00051;
- Four (4) stationary air samples BA-00052 and BA-00055;
- Two (2) air sample blanks BA-00056 and BA-00057;
- 9 soil samples RR-00047 through RR-00055.

No visible vermiculite was observed in soil samples RR-00047 through RR-00049, but low concentrations were observed in samples RR-00050 through RR-00055. Stationary air and soil sampling locations are depicted on Figure 10. This project completed RP-21's work within OU6.

6.7 September 25, 2008

Sampling focused on RP-15 that replaced 600 feet of rail on wooden ties east of the Troy (MP 1341). This work site was approximately 3.6 miles west of Troy (Figure 2).

The following samples were collected:

- One (1) simulated on-looker trespasser personal air sample BA-00060;
- Two (2) simulated pedestrian trespasser personal air samples BA-00061 and BA-00062;
- Four (4) stationary air samples BA-00064 and BA-00067;
- One (1) duplicate stationary air sample BA-00068;





- One (1) air sample blank BA-00069;
- 7 soil samples RR-00056 through RR-00062.

Visible vermiculite was not observed in any of the soil samples. Stationary air and soil sampling locations are depicted on Figure 10. This project completed RP-15's work within OU6.



7.0 DISCUSSION OF RESULTS

Air sample results are summarized in Table 1 and complete laboratory reports and chain of custody forms are found in Appendix G. Soil sample results are summarized in Tables 2 and 3 and complete laboratory reports and chain-of-custody forms are found in Appendix H.

7.1 Stationary Air Sampling Results

A total of 22 stationary air samples and two (2) duplicates were collected and submitted for laboratory analysis using ISO 10312 methods. Analytical sensitivity for these samples ranged from 0.000397 s/cc to 0.0024 s/cc. All samples met the target analytical sensitivity. All samples were non-detect for LA, OA and Chrysotile (Table 1).

7.2 Simulated Tresspasser Scenario Air Sampling Results

A total of seven (7) simulated onlooker trespasser and 14 simulated pedestrian trespasser scenario air samples were collected. All simulated trespasser samples were submitted for analysis using ISO 10312 methodology and analytical sensitivity ranged from 0.000967 s/cc to 0.00125 s/cc. All samples met the target analytical sensitivity. All simulated trespasser scenario air samples were non-detect (Table 1).

7.3 Air Sample Blank Results

A total of 8 blank samples were collected and submitted for analysis. Three of the blanks were not analyzed at the discretion of EMSL and were archived. All of the blanks that were analyzed resulted in non-detection of LA, OA and Chrysotile (Table 1).

7.4 Soil Sample Analysis

Each soil sample was sieved and subdivided into fine and coarse fraction by CDM as described in Section 5.1.3. The following is a discussion of the results of analysis of each of these fractions.

7.4.1 FINE FRACTION ANALYSIS

A total of 61 soil samples were collected during the ABS event. All samples contained a fine fraction, which was analyzed via PLM-VE methods. A total of 18 Quality Assurance/Quality Control (QA/QC) samples were prepared by CDM and submitted for PLM-VE analysis. All samples, with the exception of RR-00022 and RR-00025, were non-detect for LA, OA and Chrysotile. Samples RR-00022 and RR-00025 contained 0.1% LA and were found in bin B1. Both samples were collected within the limits of the Kootenai Falls siding at BNSF MP 1331.5





(RR-00022) and MP 1331 (RR-00025). These locations are depicted on Figures 7 and 6, respectively.

7.4.2 COARSE FRACTION ANALYSIS

A total of 50 samples had coarse fractions that were analyzed via PLM-Gravimetric methods. Additionally, 8 QA/QC samples were prepared by CDM and submitted for analysis. All samples were non-detect for LA, OA and Chrysotile (Table 3).



8.0 REFERENCES

AECOM, 2008a, Rail Maintenance Worker Receptor Activity-Based Sampling and Analysis Plan - Operable Unit 6. October, 2008

AECOM, 2008b, Rail Maintenance Public Receptor Activity-Based Sampling and Analysis Plan - Operable Unit 6. September, 2008.

CDM, Undated, Revision 2 - Soil Sample Collection at Residential and Commercial Properties. Undated.

CDM, 2007, Semi-Quantitative Visual Estimation of Vermiculite is Soils at Residential and Commercial Properties. May, 2007

EMR, 2008, Health and Safety Plan – BNSF Maintenance of Way Activity Based Sampling, Libby, Montana. September, 2008.

EMR, 2010, Activity Based Sampling Summary Report – Worker Receptors. March, 2010.

USEPA, 2008, Procedure for Combining Mass Fraction Estimates of Libby Amphibole for the Coarse and Fine Fractions of Soil and Soil-Like Samples at the Libby Asbestos Site – Technical Memo 8. February 21, 2008.



9.0 STANDARD OF CARE

The data generated and conclusions provided are based upon the scope of work performed. All work was conducted in a manner consistent with customary principles in the fields of science and engineering. EMR is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report. No other warranty, expressed or implied, is made.

The results reported and any opinions reached by EMR are for the benefit of the client and unless agreed to by EMR in writing, are not to be disclosed to or relied upon by any third party. The results and opinions set forth by EMR in this report will be valid as of the date of the report. EMR assumes no obligation to advise you of any changes that may later be brought to our attention.

EMR, Inc., as environmental consultants, respectfully submits this report.

The preceding report was prepared and reviewed by the following EMR personnel.

Author:

Scott Carney, PG, CHMM Senior Geologist

and Nelch

Reviewed By:

Dave Welch, L.G. Project Geologist

March 12, 2010 Date

March 12, 2010

Date



TABLES

Table 1. Summary of ABS Air Sampling Results

Activity Based Sampling Summary Report - Public Receptors BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008

EMR Project #5539-120

Index	Sample	Sample	Analysis	Sample	Volume	Sensitivity	Libby	Other	Chrysotile	Personnel	Job	Milepost
ID	Group	Date	Date	Type	(L)		Amphibole	Amphibole	s/cc	Name		
							s/cc	s/cc				
BA-00003	Property	9/17/2008	11/12/2008	Pedestrian	933	0.000814	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1312</td></dl<>	Amanda Thornton	EMR	1312
BA-00004	Property	9/17/2008	11/12/2008	Pedestrian	991	0.000766	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1312</td></dl<>	Dave Welch	EMR	1312
BA-00005	Property	9/17/2008	11/6/2008	On-Looker	1028	0.000993	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1312</td></dl<>	Matt Lenz	EMR	1312
BA-00006	SP-138440	9/17/2008	10/31/2008	Stationary	1778	0.0024	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<>	NA	NA	1312
BA-00007	SP-138441	9/17/2008	10/31/2008	Stationary	1763	0.0024	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<>	NA	NA	1312
BA-00008	SP-138442	9/17/2008	10/31/2008	Stationary	2440	0.00202	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<>	NA	NA	1312
BA-00009	SP-138443	9/17/2008	10/31/2008	Stationary	2402	0.00205	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1312</td></dl<>	NA	NA	1312
BA-00010	Blank	9/17/2008	10/31/2008	Blank	0	Blank	0	0	0	NA	NA	1312
BA-00013	AD-005568	9/18/2008	11/12/2008	Pedestrian	977	0.000777	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331.5</td></dl<>	Dave Welch	EMR	1331.5
BA-00014	AD-005568	9/18/2008	11/12/2008	Pedestrian	942	0.000806	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331.5</td></dl<>	Amanda Thornton	EMR	1331.5
BA-00015	AD-005568	9/18/2008	11/6/2008	On-Looker	938	0.000987	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331.5</td></dl<>	Matt Lenz	EMR	1331.5
BA-00016	SP-138444	9/18/2008	10/31/2008	Stationary	2675	0.00221	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<>	NA	NA	1331.5
BA-00017	SP-138445	9/18/2008	10/31/2008	Stationary	2675	0.00221	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<>	NA	NA	1331.5
BA-00018	SP-138446	9/18/2008	10/31/2008	Stationary	2538	0.00233	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<>	NA	NA	1331.5
BA-00019	SP-138447	9/18/2008	10/31/2008	Stationary	2523	0.00235	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331.5</td></dl<>	NA	NA	1331.5
BA-00020	Blank	9/18/2008	10/31/2008	Blank	0	Blank	0	0	0	NA	NA	1331.5
BA-00023	AD-005568	9/19/2008	11/12/2008	Pedestrian	960	0.000791	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1331</td></dl<>	Dave Welch	EMR	1331
BA-00024	AD-005568	9/19/2008	11/12/2008	Pedestrian	953	0.000797	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1331</td></dl<>	Amanda Thornton	EMR	1331
	AD-005568		11/6/2008	On-Looker	988	0.000967	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1331</td></dl<>	Matt Lenz	EMR	1331
BA-00026	SP-138448	9/19/2008	10/31/2008	Stationary	1961	0.00216	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<>	NA	NA	1331
BA-00027	Blank	9/19/2008	10/31/2008	Blank	0	Blank	0	0	0	NA	NA	1331
BA-00028	SP-138449	9/19/2008	10/31/2008	Stationary	1968	0.00215	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1331</td></dl<>	NA	NA	1331
BA-00031	AD-005568	9/22/2008	11/6/2008	On-Looker	779	0.000975	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1329.8</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1329.8</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1329.8</td></dl<>	Matt Lenz	EMR	1329.8
BA-00032	AD-005568	9/22/2008	11/12/2008	Pedestrian	780	0.000974	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1329.8</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1329.8</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1329.8</td></dl<>	Amanda Thornton	EMR	1329.8
BA-00033	AD-005568	9/22/2008	11/12/2008	Pedestrian	658	0.00115	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1329.8</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1329.8</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1329.8</td></dl<>	Dave Welch	EMR	1329.8
	SP-138450	9/22/2008	10/31/2008	Stationary	1718	0.00215	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<>	NA	NA	1329.8
		9/22/2008	10/31/2008	Stationary	1718	0.00215	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1329.8</td></dl<>	NA	NA	1329.8
BA-00036	Blank	9/22/2008	Archived	Blank	0	Blank	0	0	0	NA	NA	1329.8
	AD-005568		11/6/2008	On-Looker	817	0.00098	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1337</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1337</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1337</td></dl<>	Matt Lenz	EMR	1337
	AD-005568		11/13/2008	Pedestrian	780	0.00237	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1337</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1337</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1337</td></dl<>	Amanda Thornton	EMR	1337
	AD-005568		11/13/2008	Pedestrian	718	0.00229	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1337</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1337</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1337</td></dl<>	Dave Welch	EMR	1337
	SP-138454		11/14/2008	Stationary	1915	0.000397	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<>	NA	NA	1337
	SP-138455		11/5/2008	Stationary	1915	0.000397	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1337</td></dl<>	NA	NA	1337
BA-00046	AD-005568	9/23/2008	Archived	Blank	-	-	-	-		NA	NA	1337

Table 1. Summary of ABS Air Sampling Results

Activity Based Sampling Summary Report - Public Receptors

BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008 EMR Project #5539-120

Index	Sample	Sample	Analysis	Sample	Volume	Sensitivity	Libby	Other	Chrysotile	Personnel	Job	Milepost
ID	Group	Date	Date	Type	(L)		Amphibole	Amphibole	s/cc	Name		
							s/cc	s/cc				
BA-00049	AD-005568	9/24/2008	11/6/2008	On-Looker	803	0.000997	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1339.5</td></dl<>	Matt Lenz	EMR	1339.5
BA-00050	AD-005568	9/24/2008	11/13/2008	Pedestrian	806	0.0023	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1339.5</td></dl<>	Amanda Thornton	EMR	1339.5
BA-00051	AD-005568	9/24/2008	11/13/2008	Pedestrian	791	0.0022	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1339.5</td></dl<>	Dave Welch	EMR	1339.5
BA-00052	SP-138456	9/24/2008	11/5/2008	Stationary	1626	0.000467	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<>	NA	NA	1339.5
BA-00053	SP-138457	9/24/2008	11/5/2008	Stationary	1619	0.000469	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<>	NA	NA	1339.5
BA-00054	SP-138458	9/24/2008	11/5/2008	Stationary	1634	0.000465	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<>	NA	NA	1339.5
BA-00055	SP-138459	9/24/2008	11/5/2008	Stationary	1634	0.000465	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1339.5</td></dl<>	NA	NA	1339.5
BA-00056	AD-005568	9/24/2008	Archived	Blank	0	-	-	-	-	NA	NA	1339.5
BA-00057	AD-005568	9/24/2008	Archived	Blank	0	-	-	-	-	NA	NA	1339.5
BA-00060	AD-005568	9/25/2008	11/6/2008	On-Looker	608	0.00125	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>Matt Lenz</td><td>EMR</td><td>1341</td></dl<>	Matt Lenz	EMR	1341
BA-00061	AD-005568	9/25/2008	11/13/2008	Pedestrian	630	0.00235	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>Amanda Thornton</td><td>EMR</td><td>1341</td></dl<>	Amanda Thornton	EMR	1341
BA-00062	AD-005568	9/25/2008	11/13/2008	Pedestrian	602	0.00234	<dl< td=""><td><dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>Dave Welch</td><td>EMR</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>Dave Welch</td><td>EMR</td><td>1341</td></dl<>	Dave Welch	EMR	1341
BA-00063	SP-138460	9/25/2008	NS	Stationary	1170	-	-	-	-	NA	NA	1341
BA-00064	SP-138460	9/25/2008	11/5/2008	Stationary 1	1170	0.000649	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<>	NA	NA	1341
BA-00065	SP-138461	9/25/2008	11/5/2008	Stationary	1178	0.000645	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<>	NA	NA	1341
BA-00066	SP-138462	9/25/2008	11/5/2008	Stationary	1170	0.000649	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<>	NA	NA	1341
BA-00067	SP-138463	9/25/2008	11/5/2008	Stationary	1178	0.000645	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<>	NA	NA	1341
BA-00068	SP-138464	9/25/2008	11/5/2008	Stationary ²	1178	0.000645	<dl< td=""><td><dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<></td></dl<>	<dl< td=""><td>NA</td><td>NA</td><td>1341</td></dl<>	NA	NA	1341
BA-00069	AD-005568	9/25/2008	11/6/2008	Blank	0	Blank	0	0	0	NA	NA	1341

NA - Not Applicable

DL - Detection Limits

NS - Not Submitted due to damage to filter

Archived - Blank archieved by CDM

1 - Colocated with BA-000063

2 - Colocated with BA-00067

Table 2. Summary of Soil Sampling PLM-VE (Fine Fraction) Results Activity Based Sampling Summary Report - Public Receptors BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008 EMR Project #5539-120

Index	Location	Sample	Sample	Analysis	Libby	Bin	Other	Chrysotile	Visible	Milepost
ID	ID	Group	Date	Date	Amphibole		Amphibole		Vermiculite	
					%		%	%		
September 17, 2008 - 15 samples										
RR-00001	SP-138460	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
	SP-138461	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00003	SP-138462	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00004	SP-138463	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00005	SP-138464	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
	SP-138465	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
RR-00007	SP-138466	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
RR-00008	SP-138467	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
RR-00009	SP-138468	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00010	SP-138469	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00011	SP-138470	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
_	SP-138471	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00013	SP-138472	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
	SP-138473	Property	9/17/2008	4/27/2009	ND	A	ND	ND	Low	1312
RR-00015	SP-138474	Property	9/17/2008	4/27/2009	ND	A	ND	ND	None	1312
		1 ,	27.277.2000						- 1 1 2 - 2	
	.8, 2008 - 9 sa	_	0.44.0.45.00.0	1/2=/2000						1221 7
	SP-138475	Property	9/18/2008	4/27/2009	ND	A	ND	ND	None	1331.5
RR-00017	SP-138476	Property	9/18/2008	4/27/2009	ND	A	ND	ND	None	1331.5
RR-00018	SP-138477	Property	9/18/2008	4/27/2009	ND	A	ND	ND	None	1331.5
RR-00019	SP-138478	Property	9/18/2008	4/27/2009	ND	A	ND	ND	None	1331.5
RR-00020	SP-138479	Property	9/18/2008	4/27/2009	ND	A	ND	ND	Low	1331.5
RR-00021	SP-138480	Property	9/18/2008	4/27/2009	ND	A	ND	ND	Low	1331.5
RR-00022	SP-138481	Property	9/18/2008	4/28/2009	0.1	B1	ND	ND	Low	1331.5
RR-00023	SP-138482	Property	9/18/2008	4/28/2009	ND	A	ND	ND	Low	1331.5
RR-00024	SP-138483	Not Used	9/18/2008	4/28/2009	NA	NA	NA	NA	NA	1331.5
September 1	9, 2008 - 6 sa	amples								
_	SP-138484	Property	9/19/2009	4/28/2009	0.1	B1	ND	ND	None	1331
	SP-138485	Property	9/19/2009	4/28/2009	ND	A	ND	ND	None	1331
RR-00027	SP-138486	Property	9/19/2009	4/28/2009	ND	A	ND	ND	None	1331
RR-00028	SP-138487	Property	9/19/2009	4/28/2009	ND	A	ND	ND	None	1331
RR-00029	SP-138488	Property	9/19/2009	4/28/2009	ND	A	ND	ND	None	1331
	SP-138489	Property	9/19/2009	4/28/2009	ND	A	ND	ND	None	1331
Camtamah an 2	2 2000 0 0									
_	22, 2008 - 8 sa SP-138490	-	0/22/2000	4/28/2009	ND	Α.	ND	ND	NT	1220.0
		Property	9/22/2009		ND	A	ND	ND	None	1329.8
	SP-138491	Property	9/22/2009	4/28/2009	ND	A	ND	ND	None	1329.8
	SP-138492	Property	9/22/2009	4/28/2009	ND	A	ND	ND	None	1329.8
	SP-138493	Property	9/22/2009	4/28/2009	ND ND	A	ND	ND	None	1329.8
	SP-138494	Property	9/22/2009	4/28/2009	ND	A	ND	ND	None	1329.8
	SP-138495	Property	9/22/2009	4/28/2009	ND	A	ND	ND	Low	1329.8
	SP-138496 SP-138497	Property	9/22/2009	4/28/2009 4/28/2009	ND	A	ND	ND	None None	1329.8
KK-00038	SF-13849/	Property	912212009	4/20/2009	ND	A	ND	ND	none	1329.8

Table 2. Summary of Soil Sampling PLM-VE (Fine Fraction) Results Activity Based Sampling Summary Report - Public Receptors

BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008 EMR Project #5539-120

Index	Location	Sample	Sample	Analysis	Libby	Bin	Other	Chrysotile	Visible	Milepost
ID	ID	Group	Date	Date	Amphibole		Amphibole		Vermiculite	
					%		%	%		
September 2	23, 2008 - 8 s	amples								
RR-00039	•	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
	SP-138499	Property	9/23/2009	4/28/2009	ND	A	ND	ND	None	1337
RR-00041	SP-138500	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
RR-00042	SP-138501	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
RR-00043	SP-138502	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
RR-00044	SP-138503	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
RR-00045	SP-138504	Property	9/23/2009	4/28/2009	ND	A	ND	ND	Low	1337
RR-00046	SP-138505	Property	9/23/2009	4/29/2009	ND	A	ND	ND	Medium	1337
RR-00047	24, 2008 - 9 s SP-138506	Property	9/24/2008	4/29/2009	ND	A	ND	ND	None	1339.5
RR-00047	SP-138507	Property	9/24/2008	4/29/2009	ND	A	ND ND	ND ND	None	1339.5
RR-00049	SP-138508	Property	9/24/2008	4/29/2009	ND	A	ND	ND ND	None	1339.5
	SP-138509	Property	9/24/2008	4/29/2009	ND	A	ND	ND ND	Low	1339.5
RR-00051	SP-138510	Property	9/24/2008	4/29/2009	ND	A	ND	ND	Low	1339.5
RR-00051	SP-138511	Property	9/24/2008	4/29/2009	ND	A	ND	ND	Low	1339.5
RR-00053	SP-138512	Property	9/24/2008	4/29/2009	ND	A	ND	ND ND	Low	1339.5
RR-00054	SP-138513	Property	9/24/2008	4/29/2009	ND	A	ND	ND	Low	1339.5
RR-00055	SP-138514	Property	9/24/2008	4/29/2009	ND	A	ND	ND	Low	1339.5
			3/2 I/2000	1/2//2009	112	7.1	TUE	TVD	Eo II	1007.0
	25, 2008 - 7 s	_	0/05/0000	1/20/2000	ND		MD	MD	N.T.	10.41
	SP-138515	Property	9/25/2008	4/29/2009	ND	<u>A</u>	ND	ND	None	1341
RR-00057	SP-138516	Property	9/25/2008	4/29/2009	ND	<u>A</u>	ND	ND	None	1341
RR-00058	SP-138517	Property	9/25/2008	4/29/2009	ND	A	ND	ND	None	1341
RR-00059	SP-138518	Property	9/25/2008	4/29/2009	ND	A	ND	ND	None	1341
RR-00060	SP-138519	Property	9/25/2008	4/29/2009	ND	A	ND	ND	None	1341
RR-00061	SP-138520	Property	9/25/2008	4/29/2009	ND ND	A	ND	ND	None	1341
RR-00062	SP-138520	Property	9/23/2008	4/29/2009	ND	A	ND	ND	None	1341
CDM QA/Q	C - 18 sampl									
RR-00201	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00202	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00203	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00204	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00205	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00206	NA	QA Sample		4/29/2009	ND	<u>A</u>	ND	ND	NA	NA
RR-00207	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00208	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00209	NA	QA Sample		4/29/2009	ND	A	ND	ND	NA	NA
RR-00210	NA	QA Sample		4/30/2009	ND	<u>A</u>	ND	ND	NA	NA
RR-00211	NA NA	QA Sample		4/30/2009	ND	A	ND	ND	NA	NA
RR-00212	NA NA	QA Sample		4/30/2009	ND	A	ND	ND	NA NA	NA NA
RR-00213	NA NA	QA Sample		4/30/2009	ND	A	ND	ND	NA NA	NA NA
RR-00214	NA NA	QA Sample		4/30/2009	ND	A	ND	ND	NA NA	NA
RR-00215	NA NA	QA Sample		4/30/2009	ND	A	ND	ND	NA NA	NA NA
RR-00216	NA NA	QA Sample		4/30/2009	ND ND	A	ND	ND	NA NA	NA NA
RR-00217	NA NA	QA Sample		4/30/2009	ND	<u>A</u>	ND	ND	NA NA	NA NA
RR-00218	NA	QA Sample	4/21/2009	4/30/2009	ND	A	ND	ND	NA	NA

NA - Not Applicable

RR-002XX series samples are QA/QC samples generated by CDM during soil sample preparation

Table 3. Summary of Soil Sampling PLM-Gravimetric (Coarse Fraction) Results Activity Based Sampling Summary Report - Public Receptors

BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008 EMR Project #5539-120

Index	Location	Sample	Sample	Analysis	Libby	Other	Chrysotile	Milepost
ID	ID	Group	Date	Date	Amphibole	Amphibole	Quantity	
					Quantity	Quantity		
September 1	.7, 2008 - 8 sa	amnles						
RR-00001	SP-138460	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00002	SP-138461	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00005	SP-138464	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00011	SP-138470	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00012	SP-138471	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00013	SP-138472	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00014	SP-138473	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
RR-00015	SP-138474	Property	9/17/2008	4/30/2009	ND	ND	ND	1312
Santambar 1	.8, 2008 - 8 sa	amples						
RR-00016	SP-138475	Property	9/18/2008	4/30/2009	ND	ND	ND	1331.5
RR-00017	SP-138476	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00018	SP-138477	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00019	SP-138478	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00020	SP-138479	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00021	SP-138480	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00022	SP-138481	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
RR-00023	SP-138482	Property	9/18/2008	5/1/2009	ND	ND	ND	1331.5
Cantambar 1	9, 2008 - 5 s							
RR-00025	SP-138484	<u>.</u>	9/19/2009	5/1/2009	ND	ND	ND	1331
RR-00027	SP-138486	Property Property	9/19/2009	5/1/2009	ND ND	ND ND	ND ND	1331
RR-00028	SP-138487	Property	9/19/2009	5/1/2009	ND ND	ND ND	ND ND	1331
RR-00029	SP-138488	Property	9/19/2009	5/1/2009	ND	ND	ND	1331
RR-00030	SP-138489	Property	9/19/2009	5/1/2009	ND	ND	ND	1331
), 1), 2 00)	0,1,200	112	1,12	112	1001
_	22, 2008 - 7 sa	_	0/02/2000	F /1 /2000	MD	ND	ND	1220.0
RR-00031	SP-138490	Property	9/22/2009	5/1/2009	ND	ND	ND	1329.8
RR-00032	SP-138491	Property	9/22/2009	5/1/2009	ND ND	ND ND	ND	1329.8
RR-00033 RR-00034	SP-138492	Property	9/22/2009	5/1/2009	ND ND	ND ND	ND ND	1329.8
RR-00034	SP-138493 SP-138494	Property	9/22/2009	5/1/2009 5/1/2009	ND ND	ND ND	ND ND	1329.8 1329.8
RR-00035	SP-138495	Property Property	9/22/2009	5/4/2009	ND ND	ND ND	ND ND	1329.8
	SP-138496	Property	9/22/2009	5/4/2009	ND ND	ND ND	ND ND	1329.8
			912212009	3/4/2009	ND	ND	ND	1329.0
	23, 2008 - 8 sa	1						
RR-00039		Property	9/23/2009	5/4/2009	ND	ND	ND	1337
RR-00040	SP-138499	Property	9/23/2009	5/4/2009	ND	ND	ND	1337
RR-00041	SP-138500	Property	9/23/2009	5/4/2009	ND ND	ND	ND	1337
RR-00042	SP-138501	Property	9/23/2009	5/4/2009	ND	ND	ND	1337
RR-00043	SP-138502	Property	9/23/2009	5/4/2009	ND	ND ND	ND ND	1337
RR-00044	SP-138503	Property	9/23/2009	5/4/2009	ND ND	ND ND	ND	1337
RR-00045	SP-138504	Property	9/23/2009	5/4/2009	ND ND	ND	ND	1337
RR-00046	SP-138505	Property	9/23/2009	5/4/2009	ND	ND	ND	1337

Table 3. Summary of Soil Sampling PLM-Gravimetric (Coarse Fraction) Results Activity Based Sampling Summary Report - Public Receptors

BNSF RP-15/RP-21

BNSF Kootenai River Subdivision September 17-25, 2008 EMR Project #5539-120

Index	Location	Sample	Sample	Analysis	Libby	Other	Chrysotile	Milepost
ID	ID	Group	Date	Date	Amphibole	Amphibole	Quantity	
					Quantity	Quantity		
September 2	// 2008 - 8 s	amples						
RR-00047	SP-138506	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00048	SP-138507	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00050	SP-138509	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00051	SP-138510	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00052	SP-138511	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00053	SP-138512	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00054	SP-138513	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
RR-00055	SP-138514	Property	9/24/2008	5/4/2009	ND	ND	ND	1339.5
September 2	5 2009 7 9	amplas						
RR-00056	SP-138515	Property	9/25/2008	5/4/2009	ND	ND	ND	1341
RR-00057	SP-138516	Property	9/25/2008	5/4/2009	ND ND	ND ND	ND	1341
RR-00058	SP-138517	Property	9/25/2008	5/4/2009	ND ND	ND	ND	1341
RR-00059	SP-138518	Property	9/25/2008	5/4/2009	ND	ND	ND	1341
RR-00060	SP-138519	Property	9/25/2008	5/4/2009	ND	ND	ND	1341
RR-00061	SP-138520	Property	9/25/2008	5/4/2009	ND	ND	ND	1341
RR-00062	SP-138520	Property	9/25/2008	5/4/2009	ND	ND	ND	1341
September 2	•		10/21/2000	5 /4 /2000	NID.	ND	MD	27.4
RR-00203	NA	QA Sample		5/4/2009	ND	ND	ND	NA
RR-00206	NA	`	11/4/2008	5/4/2009	ND	ND	ND	NA
RR-00209	NA	QA Sample		5/4/2009	ND	ND	ND	NA
RR-00212	NA	QA Sample	4/15/2009	5/4/2009	ND	ND	ND	NA
RR-00215	NA	QA Sample	4/17/2009	5/4/2009	ND	ND	ND	NA
RR-00216	NA	QA Sample	4/17/2009	5/4/2009	ND	ND	ND	NA
RR-00217	NA	QA Sample	4/21/2009	5/4/2009	ND	ND	ND	NA
RR-00218	NA	QA Sample	4/21/2009	5/4/2009	ND	ND	ND	NA

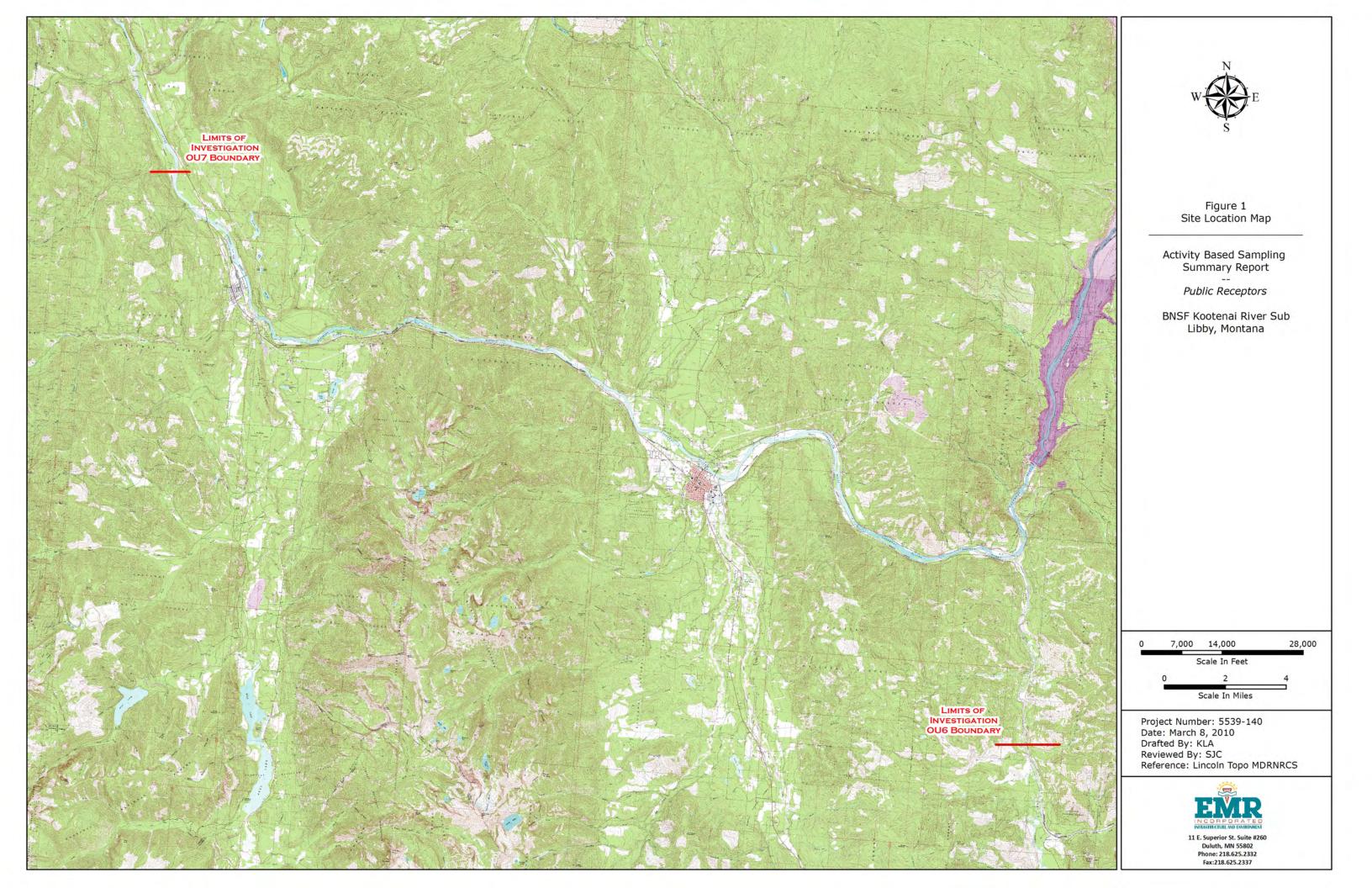
NA - Not Applicable

ND - Not Detected

RR-002XX series samples are QA/QC samples generated by CDM during soil sample preparation



FIGURES



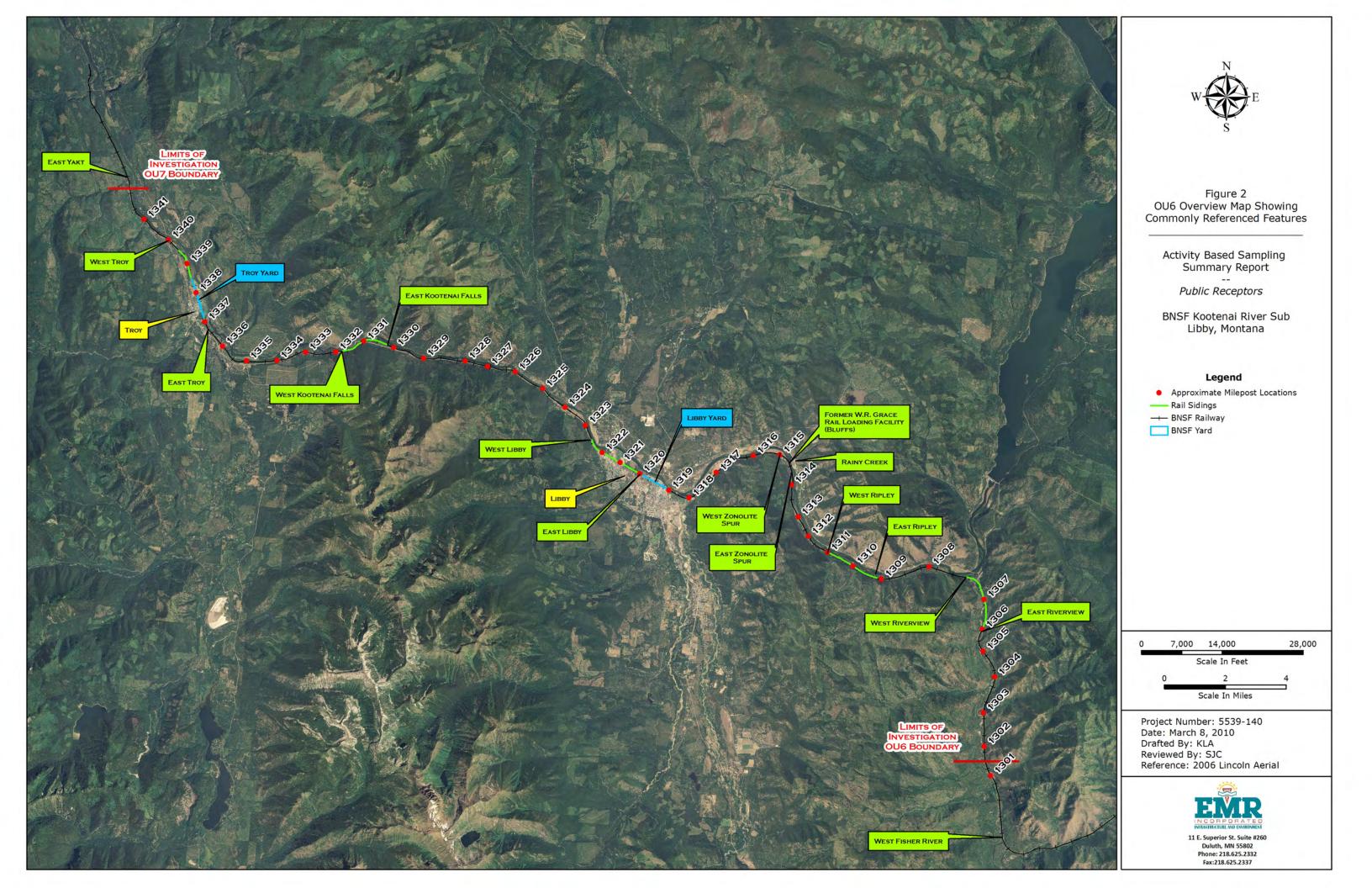










Figure 5 MP 1329.5 Sampling Location September 22, 2008

Libby, Montana

- Stationary Air Samples (BA Prefix)

200 Scale In Feet 0.01 0.02 Scale In Miles



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Figure 7 MP 1331.5 Sampling Location September 18, 2008

Activity Based Sampling Summary Report

Public Receptors

BNSF Kootenai River Sub Libby, Montana

Legend

- Met Station
- Stationary Air Samples (BA Prefix)
- Soil Samples (RR Prefix)
- ---- BNSF Railway

100 200 Scale In Feet 0.01 0.02 Scale In Miles

Project Number: 5539-140 Date: March 8, 2010 Drafted By: KLA Reviewed By: SJC Reference: 2006 Lincoln Aerial



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Figure 10 MP 1341 Sampling Location September 25, 2008

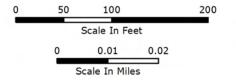
Activity Based Sampling Summary Report

Public Receptors

BNSF Kootenai River Sub Libby, Montana

Legend

- Met Station
- Stationary Air Samples (BA Prefix)
- Soil Samples (RR Prefix)
- ---- BNSF Railway



Project Number: 5539-140 Date: March 8, 2010 Drafted By: KLA Reviewed By: SJC Reference: 2006 Lincoln Aerial



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APPENDIX A

ANALYTICAL SUMMARIES

Requirements Revision #: 0 Effective Date: September 17, 2008

SAP ANALYTICAL SUMMARY # OU6RR0908 SUMMARY OF PREPARATION AND ANALYTICAL REQUIREMENTS FOR ASBESTOS

SAP Title: Rail Maintenance Public Receptor Activity-Based Sampling and Analysis Plan

SAP Date (Revision): September 23, 2008

EPA Technical Advisor: Kathryn Hernandez

(contact to advise on DQOs of SAP related to preparation/analytical requirements)

Sampling Program Overview: This document is the Rail Maintenance Public Receptor Activity-Based Sampling and Analysis Plan (SAP) for the collection and analysis of samples of soil and outdoor air in the immediate vicinity of rail maintenance activities that may actively disturb outdoor soil on portions of BNSF Railway Company (BNSF) Right-of-Way (ROW), which is located within Operable Unit (OU) six of the Libby, Montana, Superfund Site. This SAP addresses public receptors (e.g., trespassers, near-by residents) that may be exposed to asbestos in air as a result of BNSF rail maintenance activities. Potential exposures will be evaluated through the collection of personal air samples (tresspassers), stationary air samples and soil samples (to provide valuable information for scoping the RI/FS Work Plan for OU6). A total of 53 air samples (21 personal, 25 stationary, 7 blanks) and 61 soil samples will be collected.

Index ID Prefix: BA = Air, RR = Soil

Medium-Specific TEM/PCM Preparation and Analytical Requirements for Field Samples:

			Preparation	Details		A	nalysis Details		
Medium Code	Medium, Sample Type	Investigative? (a)	With Ashing (b)	Prep? (a,b) Without Ashing (b)	Filter Archive? (b)	Method(s)	Recording Rules	Analytical Sensitivity/ Stopping Rules	Applicable Laboratory Modifications (c)
A	Outdoor ABS Onlooker Air Samples	Yes	Yes Based on Analyst's Judgement	No	Yes	TEM ISO 10312	All Asbestos structures counted; L: ≥0.5µm AR: ≥3:1	Count until 1 is achieved: i) Target S = 0.0001 cc- 1(d), ii) 50 LA found, or iii) 0.5 mm ² of filter is evaluated	LB-000016, LB-000016a, LB-000019, LB-000028, LB-000029, LB-000029a, LB-000029b, LB-000030, LB-0000031, LB-000031a, LB-000045, LB-000053, LB-000066, LB-000084, LB-000085
В	Outdoor ABS Pedestrian Air Samples	Yes	Yes Based on Analyst's Judgement	No	Yes	TEM ISO 10312	All Asbestos structures counted; L: ≥0.5µm	Count until 1 is achieved: i) Target S = 0.0001 cc-	LB-000016, LB-000016a, LB-000019, LB-000028, LB-000029, LB-000029a, LB-000029b, LB-000030,

			Preparation	Details		A	nalysis Details		
Medium, Code Medium, Sample Type		Investigative? (a)	With Ashing (b)	Without Ashing (b)	Filter Archive? (b)	Method(s)	Recording Rules	Analytical Sensitivity/ Stopping Rules	Applicable Laboratory Modifications (c)
							AR: ≥3:1	1(d), ii) 50 LA found, or iii) 0.5 mm ² of filter is evaluated	LB-0000031, LB-000031a, LB-000045, LB-000053, LB-000066, LB-000084, LB-000085
С	Outdoor Stationary Air Samples	Yes	Yes Based on Analyst's Judgement	No	Yes	TEM ISO 10312	All Asbestos structures counted; L: ≥0.5µm AR: ≥3:1	Count until 1 is achieved: i) Target S = 0.0001 cc- 1(d), ii) 50 LA found, or iii) 0.5 mm ² of filter is evaluated	LB-000016, LB-000016a, LB-000019, LB-000028, LB-000029, LB-000029a, LB-000029b, LB-000030, LB-0000031, LB-000031a, LB-000045, LB-000053, LB-000066, LB-000084, LB-000085

- (a) See LB-000053 for additional details
- (b) See most current version of EPA-LIBBY-08 for preparation details
- (c) Use most recent versions of listed modifications
- (d) Target sensitivity is set at 0.0001 cc-1; however, according to the Field Change Order (FCO) #17-1 (attached), sensitivity was adjusted to 0.0024 cc-1.

TEM/PCM Preparation and Analytical Requirements for Quality Control Samples:

	-]	Preparation D	etails		Analysis Details		Applicable Laboratory	
Medium Code	Medium, Sample Type	With Ashing (b)	t Prep? Without Ashing (b)	Filter Archive? (b)	Method(s)	Recording Rules	Stopping Rules	Modifications (c)	
D	Field Blank	No	No	Yes	TEM ISO 10312	All Asbestos structures counted; L: ≥0.5µm AR: ≥3:1	Count until 0.1 mm ² of filter is evaluated	LB-000016, LB-000016a, LB-000019, LB-000028, LB-000029, LB-000029a, LB-000029b, LB-000030, LB-0000031, LB-000031a, LB-000045, LB-000053, LB-000066, LB-000084, LB-000085	
E	Lot Blank	No	No	Yes	TEM ISO 10312	All Asbestos structures counted; L: ≥0.5µm	Count until 0.1 mm ² of filter is evaluated	LB-000016, LB-000016a, LB-000019, LB-000028, LB-000029, LB-000029a, LB-000029b, LB-000030,	

Effective Date: September 17, 2008

		Preparation Details				Analysis Details	Applicable Laboratory	
Medium	Medium,	Indirect Prep? With Without		Filter Archive?		Recording	Stopping	Modifications
Code	Sample Type			(b)	Method(s)	Rules	Rules	(c)
		Ashing (b)	Ashing (b)	(0)		Ruics	Ruies	(6)
						AR: <u>≥</u> 3:1		LB-0000031, LB-000031a,
								LB-000045, LB-000053,
								LB-000066, LB-000084,
								LB-000085

⁽d) Target sensitivity is set at 0.0001 cc-1; however, according to the Field Change Order (FCO) #17-1 (attached) sensitivity was adjusted to 0.0024 cc-1.

PLM Preparation and Analytical Requirements:

Medium Code	Medium, Sample Type	Preparation Method	Analysis Method	Applicable Laboratory Modifications
F	Grab Soil	PLM-VE: CDM-Libby-	PLM-VE: SRC LIBBY -	LB-000024,
	Samples	06, Rev 1	03, Rev. 1	LB-0000024a

Laboratory Quality Control Frequencie	icies:	Freau	Control	⁷ Ouality	Laboratory	Ι
--	--------	-------	---------	----------------------	------------	---

TEM: Lab Blank – 4%
Recount Same – 1%

PLM: Lab Duplicate –10%
Interlab – 10%

 $\begin{array}{l} Recount\ Different-2.5\%\\ Verified\ Analysis-1\%\\ Repreparation-1\%\\ Interlab-0.5\% \end{array}$

Requirements Revision:

requirements	140 / 1510111					
Revision #:	Effective Date:	Revision Description				
Analytical Labo	oratory Review Sign					
□ D.//- [0 . 1		1	DECAT Internal Later		1
	sign & date:			ESAT [sign & date:		
]	☐ Hygeia [sign & date: _]
EMSL -	- Westmont [sign &	z date:]	MAS [sign & date:]
		date:]	RESI [sign & date:]
[C] 1 ·	.1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 11 11 11 11 11		1 1 1 1 1 1 1 1	. 1 1 . 1	• 1
-		g above indicates that th	he laboratory has reviewed	d and acknowledged the prepar	ation and analytical requ	urements associated
with the sp	ecified SAP.]					



APPENDIX B

FIELD SAMPLING DATA SHEETS - AIR

Person Sampled/Co. Name: Access Timbo FEMR SSN 9/9 Task Tresposser Pede Data Item Cassette 1 Cassette 2 Cassette 3 Index ID BA- 00003 Location ID AB- 00055G8 Sample Group From Type (Grole) File (Indication Description MID 7.31/2 Category (Grole) Indoor Outdoor Indoor Outdoor Indoor Outdoor Filer Diameter (Grole) Filer Diameter (Grole) Filer M45 FCM 0.8 Fow Meter Type (Grole) Rotomietes DryCal NA Rotometer DryCal NA Rotometer DryCal NA Rotometer Start Time DryCal NA Rotometer Start Time DryCal May Rotometer DryCal May Rotometer Start Time DryCal May Rotometer May No Yes NA N	Field Logbook No: Address: BNSF I Pusiness Name: Land Use: Residen Sampling Team: CDI	1 Page No:_ ROW NA tial School Commerc M Other <u>EMR</u> Names	Sial Mining Roadway Other (ROW)						
Location ID AD: 60'55'08 Sample Group Froperty Location Description MP 7312 Category (circle) Indoor Category Category Category Caregory			Professional Company of the Company						
Category (circle)	Index ID	BA- 00003	917/08						
Sample Group Ficoportis Focation Description MID 7312 Category (circle) ES FB (field blank) LB (forblank) FS FB (field blank) LB (forblank) Matrix Type (circle) Jindoor Outdoop Jindoor Outdoor Filter Diameter (circle) TEM 45 (CM, 0,8) TEM 45 PCM 0.8 Flow Meter Type (circle) Rotometer DyCal NA Rotometer DyCal NA Pump ID Number 40-99 Flow Meter ID No U=0-45 Start Flow (Umin) Start Flow (Umin) Stop Flow (Umin) A No Yes NA No Yes NA	Location ID			Section 197					
Category (circle) Category (circle) Category (circle) FB (field blank) EB-(fot blank) FS FB (field blank) FS FB (field blank) FS FB (field blank) EB-(fot blank) FS FB (field bla	Sample Group		Service processes of adoption many processors and adoption of the service of the						
Matrix Type (circle) [Indoor Outdoor Indoor Outdoor Filter Diameter (circle) 25mm) 37mm 25mm 25mm 37mm 25mm 37mm 25mm 25mm 25mm 25mm 25mm 25mm 25mm 2	Eccation Description	The state of the second of	The second secon	The state of the s					
Matrix Type (circle) [Indoor Outdoor Indoor Outdoor Filter Diameter (circle) 25mm) 37mm 25mm 25mm 37mm 25mm 37mm 25mm 25mm 25mm 25mm 25mm 25mm 25mm 2									
Matrix Type (circle) [Indoor Outdoor Indoor Outdoor Filter Diameter (circle) 25mm) 37mm 25mm 25mm 37mm 25mm 37mm 25mm 25mm 25mm 25mm 25mm 25mm 25mm 2			The second secon						
Filter Diameter (circle)	A chief and service a substitute of the first service of								
Pore Size (circle) TEM 45									
Flow Meter Type (circle) Rotometer DryCal NA R		and the state of t							
Pump ID Number HO99 Flow Meter ID No. Start Date 9/17/05 Start Flow (L/min) Stop Date 13 48 Stop Flow (L/min) Pump fault? (circle) 90 Yes NA No Yes NA	Flow Meter Type (circle) (The state of the s		Park Control of the C					
Start Date Start Time Start Flow (L/min) Stop Date 4/17/08 Stop Flow (L/min) Stop Flow (L/min) Pump fault? (circle) Yes NA No Yes NA									
Start Time	Flow Meter ID No.								
Stop Date ### Stop Flow (L/min) Stop Flow (L/min) Pump fault? (circle) #### A No Yes NA #### No Yes NA	Start Date	9/17/08	100						
Stop Date ###################################	Start Time 2	Shall with a state of the state							
Stop Time 13 4 8 / Stop Flow (L/min) 2.4 No Yes NA No Yes NA	-Start-Flow (L/min)	28 X M	A The Control of the						
Stop Flow (L/min) 2 4 No Yes NA No Yes NA No Yes NA	-Stop Date	9/17/08		Comment to admirate the comment of t					
Pump fault? (circle) Yes NA No Yes NA No Yes NA	A Company of the Comp	1348	took had been been been been been been been bee						
		And the second s							
MET Station onsite? No Yes NA No Yes NA				Assessment Assessment Control					
Sample Type TWA EXC (NA) TWA EXC NA TWA EXC NA	The second section is the second section of the second section of the second section of the second section sec	EWA_ EXC_(DA)	IWA FXC NA	IWA EXC NA					
The second secon			Security of the security of th						
Cassette Lot Number:									
Archive Blank (circle) Yes (No / Archive Blank (circle); Yes No Archive Blank (circle); Yes No Volpe: Volpe: Volpe:		THE STREET STREET STREET STREET STREET STREET STREET STREET	THE RESIDENCE OF THE PROPERTY	PRESIDENT ACTION AND ACTION OF THE ACTION AND ACTION AND ACTION ASSESSMENT OF THE ACTION AND ACTION ASSESSMENT ACTION AND ACTION ASSESSMENT ACTION AC					
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Eor Field Team Completion (Provide Initials)

Completed by M.C.

ield Logbook No. ddress: BNS usiness Name: B1	ROW JAN 4	Wine Tenant: BNSE	
and Use: Residen	tial School Commercia	al Mining Roadway	Other (SOW)
ampling Team: CD	M Other <u>EMR</u> Names: <u>]</u> Name: <u>Peur Welch</u>	Sove Welch FMR SSN:9586	Task: Treypossers-Ped
	Cassette 1	Cassette 2	Cassette 3
Data Item.	Casselle		
Index ID	BA- 00004	9/1/pd	
Location ID	AD-005568		
Sample Group	Property		Andrew Construction of the
Location Description	MP 1317	The College of Marie Co.	
		THE STATE OF THE S	
	Great Control of the	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot/blank)
Category (circle) Matrix Type (circle)	FS: FB-(field blank). LB-(lot blank). Indoor. Outdoor	Indoor Outdoor	Indoor Outdoor
Filter Diameter (circle)	25mm) 37mm	25mm 37mm /	25mm 37mm
Pore Size (circle)	TEM- 45 (CM-0.B)	TEM- 45PCM- 0.8	EM-45. PCM-0.8
Flow Meter Type (circle)	Rotometes DryCal NA	Rotometer DryCal IIIA	Rotometer DryCal NA
Pump ID Number	4/00	$\sim 10^{-1}$	
Flow Meter ID No.	-VE3-65		1111
Start Date	9117108. 1749 1343	Lead Date Control of the St.	
Start Flow (Umin)	2.8 2. 8		A Some State
Stop Date	1/17/08	The state of the s	
Stop Time	J343		
Stop Flow (L/min)	3.8		
Pump fault? (circle)	(No Yes NA	No Yes /NA	No Yes NA
MET Station onsite?	No (Yes) NA TWA EXC: (ND)	No. Yes / NA TWA EXQ NA	TWA EXC NA
Sample Type Field Comments.			
Cassette Lof Number:		A CC DISPOSITA V. N	Archive Blank (circle): Yes No
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Volpe:
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

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Sheet No :: PA- 004871

LIBBY Field Logbook No: Address: BNSF usiness Name: NF	Page No: ROW	Winer Tenant: BNSF	ate: 7/1 // () ()
and Use: Resident Sampling Team: CDN	ial School Commerci // Other EMR Names:	al Mining Roadway (Matt Lenz EMR SSN: 2806	Other () KOVV Task: On-looker Tres pas
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID	BA- 00005	1917/06 put	
Location:ID	AD-005568		
Sample Group	Property.		
Location Description	MP 1312		
Category-(circle)	FS) FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS: FB (field blank) LB-(lot blank)
Gategory (circle) Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indopr Øutdoor
Filter Diameter (circle)	(25mm) 37mm	.25mm 37mm	25mm 27mm
Pore Size (circle)	TEM45 CM-0.8	FTEM- 45 PCM- 0.8	TEM- #5 (; PCM-0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryGal / W	Rotometer DryCal NA
Pump ID Number	4097	$A^{\vee} V_{A}$	
Flow Meter ID No:	VFB-65		
Start Date	9/17/08		
Start Time	9753		
Start Flow (L/min)	2.8		
Stop Date	9/17/08		
Stop:Time	[400]		
Stop Flow (L/min)	2.8	No Yes NA	No Yes NA
Pump fault? (circle)	No Yes NA	No Yes NA No Yes NA	No Yes NA
MET Station onsite?	No (Yes) NA TWA EXC (NA)	TWA /EXC NA	TWA EXC NA
Sample Type Field Comments			
Gassette Lot Numbers			
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No Volpe:	Archive Blank (circle): Yes No Volpe:
Entered (LFO)	Volpe: Entered Validated:	Entered Validated	Entered Validated

For Field Team Completion
(Provide Initials) Completed by QC by

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR Sampling Date: 9/1 6 Field Logbook No: Page No: Address: BNSF ROW Owner/Tenant: BNSF usiness Name: Other (JR()\/ School Roadway Residential Commercial **Mining** Land Use: Sampling Team: CDM Other EMR Matt Lenz Names: John Starr Data Item Cassette 1 Cassette 2 Cassette 3 Index ID S/14 BA- 00007 **BA- 00008 BA-00006** WINA ecation ID SP- 138441 SP- 138442 SP- 138440 Sample Group TOPETT MP 1317 MP1317 Location Description MP 1317 (FS) Category (circle) FB-(field blank) FS FB-(field blank) FB-(field blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank) DB-(prep-dry blank) Indoor Outdoor ÑΑ Indoor Outdoor Indoor Outdoor Matrix Type (circle) NA 25mm 25mm Filter Diameter (circle) 37mm 37mm 25mm 37mm TEM .45 Pore Size (circle) PCM- 0.8 TEM- .45 PCM- 0.8 TEM- .45 PCM- 0.8 Collected GPS Status (circle) Collected Collected Previously Collected Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected- not required for sample Not Collected- not required for sample GPS File (fill in or circle) Filename: Filename: Filename: NA Rotometer Flow Meter Type (circle) NA Rotometer DryCal NA Rotometer DryCal DryCal NA 640 Pump ID Number Flow Meter ID No. Start Date OB ML 9/17/08 16 9/17/08 Start Time 0734 V8 9117108 ML til Start Flow (L/min) 91/9/08 7/17/08 9/17/08 9/17/08 Stop Date 9117/08 1305 255 1304 Stop Time ص.٦ 7.6 7.6 Stop Flow (L/min) No Yes No) Yes No Yes Pump fault? (circle) NA NA NA (Yes NA Yes Yes MET Station onsite? (circle) No No NA No NA **Post** Clear Pre Post Clear Pre Post Clear Sample Type (circle) 2nd Clear 3rd Clear (NA) 2nd Clear 3rd Clear (NA) 2nd Clear 3rd Clear (NA **Field Comments** Cassette Lot Number: Archive Blank (circle): Yes Archive Blank (circle): Yes Archive Blank (circle): Yes No No No Volpe: Volpe: Volpe: Entered (LFO): **Entered Entered Entered** Validated Validated Validated

Completed by:

QC by:

vs 10507

For Field Team Completion (Provide Initials)

Sheet No.: SA-008680 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR Page No: 6 Sampling Date: 9/17/00 Field Logbook No: Address: BNSF ROW Owner Tenant: BNSF usiness Name: NA Other UROW Land Use: Residential School Commercial Mining Roadway Sampling Team: CDM Other EMR Names: Data Item Cassette 1 Cassette 2 Cassette 3 Index ID BA- 00009 I 9/17/08 ecation ID SP- 138443 Sample Group Property **Location Description** MP1312 FS FS FB-(field blank) FS FB (field blank) Category (circle) FB-(field blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank) DB-(prep-dry blank) OB-(prep-dry blank) LB/(lbt) Outdoor Inde utdoor Matrix Type (circle) Indoor Indoor **Outdoor** NA: 25mm Filter Diameter (circle 37mm 25mm 37mm 37mm Pore Size (circle) TEM .45 PCM- 0.8 TEM- .45 PEM-0.8 PCM- 0.8 GPS Status (circle) Collected Collected Collected **Previously Collected Previously Collected** Previously Collected Not Collected-no signal (3 attempts Not Collected-no signal (3 attempts) Not Collected no signal (3 attempts) Not Collected- not required for sample Not Collected not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: Filename: NA Filename: NA NA Rotometer Flow Meter Type (circle) DryCal NΑ Rotometer DryČál *kotometer/ DryCal NA Q0802365 Pump ID Number Flow Meter ID No. Start Date Start Time Start Flow (L/min) 9/17/08 Stop Date 9 117/08 253 Stop Time 7-6 Stop Flow (L/min) Pump fault? (circle) NA Yes NA No (140 No Yes NA Yes MET Station onsite? (circle) No Yes NA No Yes NA No Yes NA P Pre Post Pre Clear Pre Post Clear Clear ost Sample Type (circle) 2nd Clear 3rd Clear 3rd Slear 2nd Clear 3rd Clear (NA 2nd Clear NA Field Comments Cassette Lot Number: Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes

For Field Team Completion (Provide Initials)	Completed by: M	/	QC by:	
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Volpe:

Entered

Validated

Volpe:

Entered

Validated

Entered (LFO):

Volpe:

Entered

Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No: Address: BNSF	ROW Page No: _	Sampling D @wner/Tenant: _BNSF	ate: 9/17/08			
usiness Name.	VA					
	Land Use: Residential School Commercial Mining Roadway Other ROW) Sampling Team: CDM Other Roadway Names:					
Data Item	Cassette 1	Cassette 2	Cassette 3			
Index ID	BA- 00010					
Location ID	Blank MINIMES					
Sample Group	Property Blank	Property	Property			
Location Description	and the second of the second o					
	Blank					
Category (circle)	FS FB (field blank) LB-(lot blank) DB-(prep-dry blank)	FS FB-(field blank) LB-(lot blank) DB-(prep-dry blank)	FB-(field blank) LB-(lot blank) DB-(prep-dry blank)			
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor NA	Indoor Outdoor NA			
Filter Diameter (circle)	25mm 37mm (25mm 37mm,	(25pam) 37mm			
Pore Size (circle)	TEM 45 PCM- 0.8	I manuficial (TEM .45 PCM- 0.8			
GPS Status (circle)	Collected	Collected	Collected			
	Previously Collected	Previously Collected	Previously Collected			
	Not Collected-no signal (3 attempts) Not Collected-not required for sample)	Not Collected-no signal (3 attempts) Not Collected- not required for sample	Not Collected-no signal (3 attempts) Not Collected- not required for sample			
GPS File (fill in or circle)	Filename:NA	Filename: NA	Filename: NA			
Flow Meter Type (circle)	Rotometer DryCal (NA)	Rotometer Dr/Cal NA	Rotometer DryCal NA			
Pump ID Number			·			
Flow Meter ID No.						
Start Date	W	· · · / · · · · · · · · · · · · · · · ·				
Start Time						
Start Flow (L/min)	All last					
Stop Date						
Stop Time						
Stop Flow (L/min)						
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA			
MET Station onsite? (circle)	No Yes NA	No Yes NA	No Yes NA			
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear NA	Pre Post Clear 2 nd Clear 3 rd Clear NA	Pre Post Clear 2 nd Clear 3 rd Clear NA			
Field Comments						
Cassette Lot	44. A					
Number:	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No			
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated			

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR

Field Logbook No:	Page No:	Sampling D	ate: <u> </u>					
Address: <u>βN5F-R</u>	owl	Owner/Tenant: <u>たい</u> sた						
usiness Name:	usiness Name:							
∟and Use: Resident	Other)(Row)							
	M Other <u>〒₩R</u> Names:_							
Person Sampled/Co.	Name: <u>Dave works 1-</u>	SSN: <u>7584</u>	Task. Trespuss 46					
Data Item	Mallis Cassette 1	Cassette 2	Cassette 3					
Index ID	BA- 00013							
Location ID	AD-005568							
Sample Group	AD-005568 Property							
Location Description	MP-1331.5							
Category (circle)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)					
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indoor Outdoor					
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm / 37mm					
Pore Size (circle)	TEM45 PCM- 0.8	TEM45 PCM- 0.8	TEM45 PCM- 0.8					
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA					
Pump ID Number	4100							
Flow Meter ID No.	UFB-65	ML						
Start Date	9/18/08	1	/					
Start Time	1006	114/00						
Start Flow (L/min)	37. €	9/19/						
Stop Date	9/18/08	(1						
Stop Time	1555							
Stop Flow (L/min)	2.8							
Pump fault? (circle)	(No Yes NA	No Yes NA	No Yes NA					
MET Station onsite?	No (Yes) NA	No Yes NA	No Yes NA					
Sample Type	TWA EXC (NA	TWA EXC NA	TWA EXC NA					
Field Comments								
Cassette Lot								
Number: 7198176164	Archive Blank (circle): Yes No	Archive Blank (sirela): Vos. No.	Archive Blank (circle): Yes No					
	Volpe:	Archive Blank (circle): Yes No Volpe:	Volpe:					
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated					

For Field Team Completion	Completed by ML	QC by SJC
(Provide Initials)	Completed by 101	QC by 200

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR

Field Logbook No:		Sampling D	ate: <u> </u>			
Address: <u> </u>	Sow	Owner/Tenant: BNSF				
Rusiness Name:)A		_			
Land Use: Residential School Commercial Mining Roadway Offher(たらい)						
	M Other <u>EMR</u> Names:_		_			
Person Sampled/Co.	Name: Amanda Therton /	FMR SSN: 4991	Task: Tresspassor			
Data Item	Cassette 1	Cassette 2	Cassette 3			
index ID	BA- 00014					
Location ID	AD-005568					
Sample Group	AD-005568 Property					
Location Description	MP-1331.5					
Category (circle)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)			
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indoor Outdoor			
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm 37mm			
Pore Size (circle)	TEM45 PCM- 0.8	TEM45 PCM- 0.8	TEM45 PCM- 0.8			
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer Drydal NA	Rotometer DryCal NA			
Pump ID Number	4095	1010				
Flow Meter ID No.	NF13-65	409				
Start Date	9/18/08	9/01/	1			
Start Time	1000	\\				
Start Flow (L/min)	₹.€					
Stop Date	9118108					
Stop Time	1855					
Stop Flow (L/min)	2.6					
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA			
MET Station onsite?	No (Yes) NA	No Yes NA	No Yes NA			
Sample Type	TWA EXC NA	TWA EXC NA	TWA EXC NA			
Field Comments Cassette Lot						
Number: 1198170164						
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No			
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated			
	· ·					

For Field Team Completion	Completed by	11	QC by SUC
(Provide Initials)	Completed by	12	GC DY 302

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR

Field Logbook No:	<u> </u>	_ 	ate: <u>9118/లర్</u>
Address: <u> </u>		Øwner/Tenant:	
lusiness Name:			
Land Use: Resident		, ,	Other (Row)
	M Other EMR Names:_		
Person Sampled/Co.	Name: Mett Len 7 / F	SSN: 1500	Task: Onlookes / Trepesse
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID (4)	BA- 00015		
Location ID	AD-005568		
Sample Group	AD-005568 Property		
Location Description	MP 1331.5		
Category (circle)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indoor / Outdoor
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm / 37mm
Pore Size (circle)	TEM45 PCM- 0.8	TEM45 PCM- 0.8	TEM- 45 PCM- 0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	4099	MU.	/
Flow Meter ID No.	UF3-65	1 \ 09	,
Start Date	9/18/08	a 1 81/	
Start Time	1015		
Start Flow (L/min)	ર . જ		
Stop Date	9/18/08		
Stop Time	1556	A	
Stop Flow (L/min)	2.7		
Pump fault? (circle)	No Yes NA	No Yes / NA	No Yes NA
MET Station onsite?	No Yes NA	No Yes NA	No Yes NA
Sample Type	TWA EXC (NA)	TWA EXC NA	TWA EXC NA
Field Comments			
Cassette Lot			
Number: 7198170164	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
	Volpe:	Volpe:	Volpe:
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion	Completed by 4/	QC by SC
(Provide Initials)	Completed by ML	QC by 302

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	Page No:	Sampling Date: 9/18/08				
Address: <u>BNSF F</u>	30W	Owner/Tenant: BNSF				
usiness Name: NA	4		,			
Land Use: Resident	^		Other (ROW)			
Sampling Team: CDM	M Other EMK Names: Names:	John Starr, Scott	carrey			
Data Item	Cassette 1	Alalib Cassette 2	19//8/08 Cassette 3			
Index ID χ	BA- 00016	BA- 00017	BA- 00018			
Location ID	SP- 138444	/ SP- 138445	SP- 138446			
Sample Group	Property	Property	Property			
Location Description	1		Q			
	171331,5	MP 1331.5	MP 1331.5			
Category (circle)	FS FB-(field blank)	FS FB-(field blank)	FB-(field blank)			
	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)			
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor NA	Indoor Outdoor NA			
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm 37mm			
Pore Size (circle)	TEM-45 (PCM-0.8)	TEM45 PCM- 0.8	TEM45 PCM- 0.8			
GPS Status (circle)	Coffected	Collected	Collected			
	Previously Collected	Previously Collected	Previously Collected			
	Not Collected-no signal (3 attempts) Not Collected-not required for sample	Not Collected-no signal (3 attempts) Not Collected- not required for sample	Not Collected-no signal (3 attempts) Not Collected- not required for sample			
GPS File (fill in or circle)	Filename: BNSF-ROW NA		Filename: BUSF-ROW NA			
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal (NA)	Rotometer DryCal NA			
Pump ID Number	93 6401 ML9/1505	8369 400 E	8361 N. 9/18/08			
Flow Meter ID No.	WIB 65 PFKS-1	UFB 65 PFKS-1	01-13-65 PFKS-1			
Start Date	9/18/08	9118/08	9/18/08			
Start Time	०९ ५ १ ७ १ १ ७	৩१५४	1011			
Start Flow (L/min)	76	1.6	7.6			
Stop Date	9/18/08	9/18/08	9/18/08			
Stop Time	1550	1550	1545			
Stop Flow (L/min)	7.4	7.6	7.6			
Pump fault? (circle)	(No Yes NA	Yes NA	NO Yes NA			
MET Station onsite? (circle)	No (Yes) NA	No Yes NA	No Yes NA			
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear	Pre Post Clear 2 nd Clear 3 rd Clear 1 VA	Pre Post Clear 2 nd Clear 3 rd Clear NA			
Field Comments						
Cassette Lot Number: 7[9870164	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No			
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated			

Sheet No.: SA-008692 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR Sampling Date: 9/18/08 Field Logbook No: Page No: _ '4 Address: BNSF ROW Owner/Tenant: BNSF usiness Name: __/\/A Other (ROW Land Use: Residential School Commercial Mining Roadway Sampling Team: CDM Other EMR Names: John Starr, Scot 9/8/06 **Data Item** Cassette 1 Cassette 2 Cassette 3 Index ID **BA-00019 BA-00020** Location ID SP- 138447 Sample Group Location Description MP1331, 5 FB (field blank) (Fs) FB-(field blank) Category (circle) FB-(field blank) FS bB-(prep-dry blank) DB-(prep-dry blank) LB-(lot blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank) Outdoor (NA.) Indoor Outdoor Outdoor Indoor Matrix Type (circle) NA Indoor NA 25mm Filter Diameter (circle) 25mm 37mm 37mm 25mm 37mm FEM- .45 RCM- 0.8 PCM- 0.8 Pore Size (circle) TEM- .45 TEM- .45 PCM- 0.8 GPS Status (circle) Collected Collected Collected Previously Collected Previously Collected Previously dollected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected- not required for sample Not Collected- not required for sample GPS File (fill in or circle) Filename: BNSF-ROW NA BNDF-ROWNA Filename: BNSF-ROW Filename NA Rotometer DryCal NA Rotometer DryCal NA Rotometer Flow Meter Type (circle) DryCal NA Pump ID Number 802365 PFKS-1 Flow Meter ID No. Start Date 9/18/108 Start Time 1012 7.6 Start Flow (L/min) 9/18/08 Stop Date Stop Time 1544 Stop Flow (L/min) 7.6 Pump fault? (circle) (NO) NA Yes No Yes NA No NA Yes NA MET Station onsite? (circle) No Nο Yes NA No Yes NA Pre Post Clear Pre Post Clear Pre Post Clear Sample Type (circle) 3rd Clear 2nd Clear 3rd Clear 2nd Clear 2nd Clear 3rd Clear (NA) NA NΑ Field Comments Cassette Lot Number: 719870164 Archive Blank (circle): Yes Nο Archive Blank (circle): Yes Archive Blank (circle): Yes No No

For Field Team Completion (Provide Initials)	Completed by: ML	QC by: 57

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Validated

Volpe:

Entered

Validated

Entered (LFO):

Volpe:

Entered_

Validated*

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Sampling Date: 9/19/08 Page No: Field Logbook No: Address: BNSF-ROW Owner/Tenant おんらき usiness Name: A Other Row) Land Use: Residential School Commercial Mining . Roadway Sampling Team: CDM Other EUR Names: Most Lewo Person Sampled/Co. Name: വ്യാധ്യാ EMR SSN:9886 Task: Trespasse Cassette 2 Data Item Cassette 1 Cassette 3 Index ID **BA- 00023** Location ID Sample Group Location Description MP-1330.5 NIN/06 Category (circle) (FS) FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Matrix Type (circle) Indoor **(QUIDOO)** Indoor Outdoor Indoor Outdoor Filter Diameter (circle) 25mm) 37mm 37m 25mm 25mm 37mm Pore Size (circle) TEM-.45 (PEM-0.8 TEM- .45 PCM-0.8 ĴЕМ- .45 PCM- 0.8 Rolometer Flow Meter Type (circle) DryCal Rotometer NA Rotometer DrvCal NA Pump ID Number 4091 Flow Meter ID No. UFB-65 Start Date 9/19/08 Start Time 0648 $\lambda.\delta$ Start Flow (L/min) Stop-Date 9//9/08 Stop Time /a31 Stop Flow (L/min) 2.8 $\langle N_{\Theta} \rangle$ Yes ÑΑ Pump fault? (circle) No Yes No Yes NA MET Station onsite? No (Es) NA Yes No NA No Yes NA Sample Type TWA **EXC** (AD TWA **EXC** NA MA **EXC** NA Field Comments Cassette Lot Number: <u>קוף אדסוני</u> Archive Blank (circle): Yes No Archive Blank (circle): Yes Archive Blank (circle): Yes Volpe: Volpe: Volpe: Entered (LFO) Entered Validated **Entered** Validated Entered Validated

the state of the s						Target and Alberta	. Just by the land and a land	S. S. Marchardon Completed In	a control of the same of	
For Field Team (Provide Initials	The State of the S	on	Cor	mpleted	i by /	4C	1,240	QC by	рW	

Archive Blank (circle): Yes No

Validated

Volpe:

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LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: Sampling Date: 9/19/08 Page No: _ Address: BNSF-ROW-Owne)/Tenant: BからF lusiness Name: ____ / // Land Use: Residential School Commercial Mining Roadway Sampling Team: CDM Other <u>EMR</u> Names: Math Lew Person Sampled/Co. Name: Aminda The Harl EMP SSN: 449/ Task: Tresposse Cassette 1 Cassette 2 Data.Item Cassette 3 Index ID BA- 00024 Location ID AD-005568 Sample Group Property Location Description MP - SHU 11/08 1331 FS /FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Category (circle) FS FB-(field b/ank) LB-(lot blank) Matrix Type (circle) Indoor Outdoor. Indoor Outdoor Indoor Outdoor Filter Diameter (circle) 25mm) 37mm 25mm 37mm 25mm 37mm Pore Size (circle) TEM=:45 RCM-0.8 TEM- .45 TEM .45 PCM- 0.8 Flow Meter Type (circle Rotometer DryCal ΝĀ Rotometer Rotometer DryCal. Pump ID Number 4095 Flow Meter ID No. UFB-65 Start Date 9/19/08 Start Time 0648 Start Flow (L/min) ວ. ຽ 9/19/08 Stop Date Stop Time Stop Flow (L/min) 2.6 Pump fault? (circle) (6) Yes NA NA No Yes No Yes ΝÀ MET Station onsite? No Yes NA No Yes NA No NA Yes Sample Type TWA **EXC** (NA) TWA EXC NÀ TWA **EXC** NA Field Comments Cassette Lot

For Field Team Completion (Provide Initials) Completed by MC QC by		
	Completed by	MC ac by D

Volpe:

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Archive Blank (circle): Yes

Validated

Archive Blank (circle): Yes

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LIBBY	FIELD SAMPLE DATA	SHEET (ESDS) EOD D	Sheet No.: PA- 004880
Field Logbook No:	and the first of the state of the first of the state of t		e rsolval Air Pate: <u>9//9/08</u>
A THE RESERVE OF THE PROPERTY	- Rawri	Owner Tenant: 13 No F	The state of the s
usiness Name:	THE RESIDENCE OF THE PARTY OF T		607774
	itial School Commerc M Other <u>FM R</u> Names:		Other DROW)
	Name: Mott lenz 1		Task: Onlooker/Trespess
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID	108/		No. 2. The second section of the second sec
	BA- 00025	The second secon	
Location ID	AD-005568	The second of th	
Sample Group	Property		
Location Description	MP- ::		4.7
100 (100 (100 (100 (100 (100 (100 (100	1 330.5 1331		
Table Person and Company	1/19/08	200 To 100 To	
Category (circle) (FS FB-(field blank) LB-(lot blank)	FS=FB-(field blank)=LB-(lot blank)=	FS=FB=(field blank) LB-(lot-blank)
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indoor Outdoor
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm/ 37mm
Pore Size (circle)	TEM- 45 PCM- 0.8	TEM45 PCM-0.8	TEM- :45 PCM- 0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NAC	Rotometer DryCal NA
Pump ID Number	4099		
Flow Meter ID No.	UFB-65	017	
Start Date	9/19/08		
Start Time ML	06-18 CO		
Start Flow (L/min)	28		
-Stop Date	9/19/08		
Stop Time	124/	Tagging to Company to the control of	Secretary Company (1997)
Stop Flow (L/min)	2.8		
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA
MET Station onsite?	No Ges NA	No √Yes NA	No Yes NA
Sample Type	TWA EXC (NA)	TWA EXO NA	TWA EXC NA
Field Comments			
Cassette Lot			
Number: 7.198170\4	The first part of the second s		
	Archive Blank (circle): Yes No Volpe:	Archive Blank (circle): Yes No Volpe:	Archive Blank (circle): Yes No Volpe:

For Field Team Completion (Provide Initials)

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LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	Page No:	/ Sampling D	late: 9//9/08
Address: BNSFR	<u>ow</u>	Owner/Tenant: BNS	
usiness Name:/\frac{\sqrt{1}}{2}	<u> </u>		
Land Use: Resident			Other (ROW)
Sampling Team: CDI	M Other <u>∈MR</u> Names:_	John Starr, Da	re welch
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID	100/	1 4	Dusk
	/A//BA- 00026	(A)/BA- 00027	9/8A- 00028
Location ID	SP- 138448	Blank	SP- 138449
Sample Group	Property	Blank	Property
Location Description	MP 133)	lan persula de ser i japan de la como de la c	1 173205
	1/19/08	Blank	MP 1331 ML 9/19/08
Category (circle)	FS FB-(field blank)	FS FB-(ffeld-blank)	FS FB-(field blank)
	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor NA	Indoor Outdoor NA
Filter Diameter (circle) (25mm - 37mm	€5mm 37mm	25mm 37mm
Pore Size (circle)	TEM-45 (PCM-0.8)	TEM- 45 PCM- 08	TEM45 (PEM-0.8)
GPS Status (circle) (11)	Collected	Collected	Collected
	Previously Collected Not Collected-no signal (3 attempts)	Previously Collected Not Collected-no signal (3 attempts)	Previously Collected Not Collected-no signal (3 attempts)
	Not Collected-not required for sample	Not Collected not required for sample	Not Collected- not required for sample
GPS File (fill in or circle)	Filename: BNSF-ROWNA	Filename:NA	Filename: BUSF-ROW NA
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	(040)	•	8369
Flow Meter ID No.	PAKS-1		PFK5-1
Start Date	9/19/08		9/19/08
Start Time	0729	11 /	0729
Start Flow (L/min)	7.6	1/1//	76
Stop Date	9/19/08	11/6	9/19/08
Stop Time	1147	9/19/00	1148
Stop Flow (L/min)	7.4		7.6
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA
MET Station onsite? (circle)	No (Yes) NA	No Yes NA	No (Res) NA
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear	Pre Post Clear 2 nd Clear 3 rd Clear NA	Pre Post Clear 2 nd Clear 3 rd Clear (NA)
Field Comments			- :
Cassette Lot	The second secon	A STATE OF THE STA	
Number: 719817064	Archive Plank (sizels): Vis. No.	Archive Plank (sizela): Van Na	Archivo Blank (sirolo): Vac. No.
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated
The second secon	- validated	- Tallidated	

	IELD SAMPLE DATA: Page No:	,我们是一种"我们的,我们就是一个的人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就会不会一个人,我们就是一个人,我们就是一个人,我们	
Address: BNSF=		Owner/Denant: BNST	
usiness Name:^	J¥ ····································	NOT THE PERSON OF THE PERSON O	
	tial School Commercia M Other FAR Names:		Other) Row)
	Name: Name:		Task OLWW/Trespesse
Data Item		Cassette 2	Cassette 3
	A second of the		
indexiD At	BA- 00031		2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Location ID	AD-005568		
Sample Group	AD-005568 Property MP-1329-1329-3		<u> </u>
Location Description	170 (329	The second secon	
	MY - 1329.8		The second secon
	1/22/08		
Category (circle)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	indoor Outdoor
The second secon	25hm 37mm	25mm 37mm	25mm 37mm
Pore Size (circle)	TEM- 45 (PCM-0.8)	TEM- 45 / PCM- 0.8	7EM-145 PCM-0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	4095		
Flow Meter ID No.	UHB-62		The second secon
Start Date	9/22/08	<i>u</i>	
Start Time	O94/		
Start Flow (L/min)	7.8		
Slop Date	7/22/08		
Stop:Time	1435		
Stop Flow (L/min)	2.5		
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA
MET Station onsite?	No Ces NA	No yes NA	No Yes NA
Sample Type	TWA EXC (NA).	TWA EXC NA	TWA EXC NA
Field Comments:			
Cassette Lot			
Number: <u>7198 70 6</u> 4			
	Archive Blank (circle): Yes No Volpe:	Archive Blank (circle): Yes No Yolpe:	Archive Blank (circle): Yes No
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion
(Provide Initials)

Completed by ML QC by

Sheet No.: PA- 004905 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: Page No: Sampling Date: 7/aa/a8 Address: BNSF-ROU Owner/Tenant: BNSF usiness Name: ALA Land Use: Residential School Commercial Mining Roadway Office (ROW) Sampling Team:: €DM:=Other EM& Names: Aminda Thombon Hat her Person Sampled/Co. Name: المرادة المر , Cassette 1 Data Item Cassette 2 Cassette 3 Index ID BA- 00032 Location ID AD-005568 Sample Group Location Description ES FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Category (circle) FS FB-(field blank) LB-(lot blank) Matrix Type (circle) Indoor Outdoor Indoor Indoor Outdoor Outdoor 37m/m Filter Diameter (circle) (25mm) 25mm 37mm 25mm 37mm Pore Size (circle) TEM- 45 (PCM-0.8) TEM-:45 PGM-018, TEM- .45 PCM- 0.8 Flow Meter Type (circle) Rotometer DryCal* NA Rotometer NA DryCal Rotometer Pump ID Number ::4091 Flow Meter ID No UFB-65 Start Date 7/22/08 Start Time 0946 Start Flow (L/min) እ.8 Stop Date: 9/22/08 Stop Time 143*5* ے ک Stop Flow (L/min) Pump fault? (circle) Yes NΑ No Yes NA MET Station onsite? No ΝÁ Yes No Yes NΑ No Yes NA TWA Sample Type EXC (NA) TWA EXC TWA: NA EX6 Field Comments Cassette Lot Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle), Yes Volpe: Volce: Volpe:

> For Field Team Completion Completed by MC QC by (Provide Initials)

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Entered (LFO)

Sheet No.: PA- 004906 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Page No: /ろ Sampling Date: カイスス/08 ** Field Logbook No: 2 Wine Menant: BNSE Address: BNSF-ROW usiness Name Other Row Land Use: Residential School Commercial Mining Roadway Sampling Team: CDM Other DAR Names: Matter SSN: 9586 Task: Tresouss Person Sampled/Co: Name:: രൂപ് വലിപ്പ Cassette 2 Cassette 3 , Cassette 1 Data Item BA- 00033 Location ID 895260-GA Sample Group Property Location Description F\$ FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Category (circle) Indoor Outdoor Outdoor Outdoor : Indoor Indoor Matrix Type (circle) 25mm) 37mm 37mm 25mm 37mm 25mm Filter Diameter (circle) Pore Size (circle) TEM/.45 (PCM- 0.8) PCM- 0.8 TEM-.45 TEM- 45 PCM= 0.8 /Rotometer DryCal NA Rotomete DryCal Rotometer DryCal NA Flow Meter Type (circle) NA Pump ID Number 4100 Flow Meter ID No. UFB-65 Start Date 9/22/08 Start Time 1030: Start Flow (L/min) a.8 == Stop Date 9/22/08 1425 Stop Time Stop Flow (Umin) 2-8 ÑĀ NA No Yes No Yes Pump fault? (circle) (NO) No MET Station onsite? No: (Ves) NA No TWA **EXC** (NA) TWA Sample Type: TWA Field Comments Cassette Lot Number 7198170164 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes No Volpe: Volpe: Validated

> For Field Team Completion Completed by Mg (Provide Initials)

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LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR			
Field Logbook No: 2 Page No: 13/14 Sampling Date: 9/22/08			
Address: BNSF1	ROW	Owner/Tenant: BNSF	
usiness Name:/	and the second s		DOM/
Land Use: Resident			Other (ROW)
Sampling Team: CDI	M Other <u>EMR</u> Names:_	MATT CEHE , JOH	
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID	V. Z.	Eassette 2 MA- 00035	
Y	BA- 00034	BA- 00035	BA- 00036
Location ID 4	SP- 138450	SP- 138451	Blank
Sample Group	Property	Property	Property 1/2/268 Blas
Location Description	MP +329 - 1329.8	MP 1329.8	Blank
	1328 ML 1/22/08	4310 AL 9/22/08	
Category (circle)	FS FB-(field blank)	FS FB-(field blank)	FS FB-(figlid blank)
To compare the trace of the compare	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor NA	Indoor Outdoor NA
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm 37mm
	TEM 45 PCM- 0.8	TEM45 (PCM- 0.8)	TEM45 (PCM- 0.8)
GPS Status (circle)	Collected Previously Collected	Official Previously Collected	Collected Previously Collected
!	Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)
	Not Collected-not required for sample	Not Collected- not required for sample	Not Collected- not required for sample
GPS File (fill in or circle)	Filename: BNSF-ROW NA	Filename: BNSF-Row NA	Filename:NA
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	<u>6401</u>	8369	
Flow Meter ID No.	PFK5-1	PFKS-	
Start Date	9122108	9122108	
Start Time	1051	1051	
Start Flow (L/min)	7.6	٦.6	
Stop Date	9/22/08	9/22/08	9/23/08
Stop Time	1437	1437	910
Stop Flow (L/min)	7.6	7.6	
Pump fault? (circle)	(No) Yes NA	No Yes NA	No Yes NA
MET Station onsite? (circle)	No Yes NA	No (Yes) NA	No (Yes) NA
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear (NA)	Pre Post Clear 2 nd Clear 3 rd Clear (PA)	Pre Post Clear 2 nd Clear 3 rd Clear (NA)
Field Comments			
Cassette Lot			
Number: 7198176164	Ashin Disable (single)	Applies Plant (sizely) Voc. No.	Archive Blank (sizel-): V N
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Validated
	72,000		

Fleid Logbook No:		SHEET (FSDS) FOR F	PERSONAL AIR Date: 9/2>/08
Address: BNSF	<u>- Raw</u>	Owner/Tenant: BN 57	
usiness Name: Name		old Nine D. J.	
Sampling Team: CE	OM OTHER TEMP Names:	mett lear	
Person Sampled/Co	Name: Mall Lenz /	EMR SSN: 2806	Task: Unloake/Tresposses
Data Item	Cassette 1		
Index ID	VIII	Cassette 2	Cassette 3
lidex ID	M BA- 00039		
Location ID			Topical and the two ways of the second
	/ AD-005568		
Sample Group	Property		
Location Description			
	MP-1337		
Category (circle)	FB-(field blank) LB-(lot blank)	FS FB-(field blank) AB-(liet blank)	FS FB-(field blank) LB-(lot blank)
Matrix Type (circle)	Indoor (Outdoor)	Indoor Outdoor/O	
Filter Diameter (circle)	25mm 37mm	25mm 47mm	
Pore Size (circle)	TEM- 45 (CM-0.8) *	TEM- 45 PCM-0.8	Extension of the second of the
Flow Meter Type (circle)	Rotometer) DryCal NA		TEM- 45 PCM- 0.8
Pump ID Number	4100	Rotometer OryCal NA	Rotometer DryCal NA
Flow Meter ID No.	VFB-68		
Start Date	Techniques de la fact de la faction de la fa		
Start Time	9/2368		
	0663		
Start Flow (L/min)	2.8	A Committee of the Comm	2
Stop Date	9/23108		
Stap Time	150		
Stop Flow (L/min)			
Pump fault? (circle)	(No) Yes NA	No Yes NA	No Yes NA
MET Station onsite?	No (Yes) NA	No Yes NA	No Yes - NA
Sample Type	TWA EXC (NA)	TWA EXC NA	TWA EXC NA
ield Comments			
Cassette Lot	AND THE RESERVE OF THE PARTY OF		
Cassette Lot lumber: 7198170\64			
		and the second s	Archive Blank (circle): Yes No
ntered (LFO)	Entered Validated		Velpe: - Validated - Validated
			vailuateu

For Field Team Completion (Provide Initials)

Completed by HC

QC.by



LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: 2. Page No: 16 Sampling Date: 9/23/33 Address: おめままるのは、 Owner Tenant: ひめまた			
Sampling Team: CDN	IA ial School Commercia M Olbert R Names: Name: <u>Amanda Tranon /</u>	Hatt LAZ	
Data Item	Cassette 1 BA- 00040	Cassette 2	Cassette:3
Location ID	AD-005568	The control of the co	
Sample Group	Property		
Location Description.			
	MP-1337		
	FS FB-(field blank): LB-(lot blank)	FS FB-(field blank) LF-(lift blank)	ES/FB-(field blank): I B-(lot blank)
Category (circle) Matrix Type (circle)	Indoor Outdoor		ndoor Outdoor
Filter Diameter (circle)	25mm 37mm	25mm 37mm 25	25mm 37mm
Pore Size (circle)	TEM- 45 (PGM- 0.8)	TEM-:45 PCM-0.8	TEM-45 PCM-0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal N/	Rotometer DryCal NA
Pump ID Number	4091		
Flow Meter ID No.	VFB-65		
Start Date	9/23/08		
Start Time	οπο -	For a special section of the section	
Start Flow (L/min)	3.7		
Stop Date	9/23/08		
Stop Time	1159 D		
Stop Flow (L/min) Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA
MET Station onsite?	No (res) NA	No Yes NA	No Yes NA
Sample Type	TWA EXC (A)	TWA EXC NA	RWA EXC NA
Field Comments.			
Cassette Lot	The second secon		
Number 1198110164	*Archive Blank (circle): Yes No.	Archive Blank (circle): Yes No.	Archive Blank (circle): Yes No
	Volpe:	Volpe:	Volpe
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion (Provide Initials)

Completed by ML

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Sheet No.: PA- 004903 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: Page No: 14 Sampling Date 9/23/08 Address: BNSF-ROW. _____(Owner/Tenant:______ NSF usiness Name: A A Land Use: Residential __Şchool-Commercial Roadway Other) Row Mining Sampling Team: CDM Other FMR Names Matters Person Sampled/Co. Name: Darwelch / EMP SSN: 9586 Task: Trespasser Data Item Cassette 1 Cassette 2 Cassette 3 Index ID **BA- 00041** Location ID 82200-DA Sample Group Property Location Description MP-1337 FS) FB-(field blank) LB-(lot blank) Category (circle) FS FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Matrix Type (circle) Indoor Outdoor Indoor Outdoor Indoor Outdoor Filter Diameter (circle) (25mm) 37mm 25mm 25mm. 37mm Pore Size (circle) PCM-0.8) TEM-.45 TEM- .45 PCM- 0.8 TEM- .45 PCM- 0.8 Flow Meter Type (circle) Rotometer DryCal Rotometer 3 DryCal Rotometer DryCal Pump ID Number 4095 Flow Meter ID No. UFB-65 Start Date 9/23/68 Start Time 0720 Start Flow (L/min) Stop Date 9/23/08 Stop Time 1151 Stop Flow (L/min) つし Pump fault? (circle) (No) Yes NA No Yes NA MET Station onsite? No res No Yes Sample Type EXC TWA NA TWA Field Comments Cassette Lot Number: 7198170164 Archive Blank (circle): Yes No ... Archive Blank (circle): Yes No Archive Blank (circle): Yes No Volpe: Volpe: Volpe: Entered (LFO) Entered Validated Entered Validated

> For Field Team Completion (Provide Initials)

Completed by MC

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Validated

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LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	Page No: _		Date: <u>9/23/08</u>
Address: BNSF		Owner/Tenant: <u>BNS</u> F	
usiness Name:			6 5 /
Land Use: Residen			Other ROW)
Sampling Team: CD	M Other <u>⊆MR</u> Names:_	John Starr, Dave W	<u>elch</u>
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID	14.5/	Till of	lilk
Tildex ID	BA- 00042	BA- 00043	MBA- 00044
Location ID	SP- 138452	SP- 1/38453	SP- 138454
Sample Group	Property	Roperty	4 <u> </u>
	1	10079.7	Property
Location Description	MP-1337	MV-1337	MP-1337
		My 21,3:3:7	
Category (circle)	FS) FB-(field blank)	FB-(field blank)	(FS) FB-(field blank)
	LB-(lot blank) DB-(prep-dry blank)	to the first term of the state	range de la comparación de la
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor) NA	Indoor Outdoor NA
Filter Diameter (circle)		25mm 37mm	25mm 37mm
Pore Size (circle)	TEM 45 PCM- 0.8	TEM- 45 PCM- 0.8	TEM45 PCM- 0.8
GPS Status (circle)	Coffected	Collected	Collected Collected
	Previously Collected	Previously Collected	Previously Collected
	Not Collected-no signal attentots	Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)
	Not Collected-not required for sample	Not Collected- not required for sample	Not Collected- not required for sample
GPS File (fill in or circle)	Filename: BNSF-Row NA	FileMarke: BNSF-ROW NA	Filename: BNSF-Row NA
Flow Meter Type (circle)	Rotometer DryCal NA	Rotomister DryCal NA	Rotometer DryCal NA
Pump ID Number	6401 /12	8369	8361
Flow Meter ID No.	PFKS-1/U	PFKS-1	PFKS-1
Start Date	9/23/08	9/23/08	9/23/68
Start Time	0727	0728	0140
Start Flow (L/min)	7.6	7.6	7.0
Stop Date	9/23/68	9/23/08	9/23/08
	1123108	1/25100	
Stop Time	1 4 1021		1152
Stop Flow (L/min)	nc/1/3/08	1/23/18	7.6
Pump fault? (circle)	(Ves) NA	(Yes) NA	No (Gs) NA
MET Station onsite? (circle)	No (Yes) NA Pre Post Clear	No Yes NA Pre Post Clear	
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear	Pre Post Clear 2 nd Clear 3 rd Clear (A)	Pre Post Clear 2 nd Clear (NA)
Field Comments			
Cassette Lot	stoped working	Stopped working	
Number: 7198170164			
	Archive Blank (circle): Yes No	Archive Black (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe:	Volpe:	Volpe:
<u></u>	Entered Validated	Entered Validated	Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR Field Logbook No: Page No: _ Sampling Date: 9/23/08 Address: BNSF ROW Owner/Tenant: BNSF usiness Name: NA Land Use: Residential School Commercial **Mining** Roadway Sampling Team: CDM Other MR Names: John Stoor Due Well Data Item Cassette 1 Cassette 2 Cassette 3 Index ID BA- 00046 BA- 00045 AD-009518 SP- 138455 Location ID Sample Group Location Description Blank MP-1337 (FS) FB-(field blank) FB-(field blank) FS FS FB-(field blank) Category (circle) DB-(bred-dry blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank) DB-(prep-dry blank) LB-(lot blank Coutdoor Qutdoop U NA Outdoor NA Indoor Matrix Type (circle) Indoor Indoor 37mm 25mm 37mm 25mm Filter Diameter (circle) 25mm_ PCM-0.8 Pore Size (circle) TÈM-PCM- 0.8 TEM- .45 TEM- .45 PCM-\0.8 Collected GPS Status (circle) Collected Collected Previously Collected Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected- not required for sample Not Collected-not required for sample Not Collected- not required for sample GPS File (fill in or circle) Filename: RNSE-ROW Filename: BNSE-ROW NA Filename: NA Retometer Flow Meter Type (circle) Retemete DryCal ŃΑ DryCal Rotometer DryCal NA 9/23/08 Pump ID Number 00802365 PFLS-1 Flow Meter ID No. 9123105 Start Date Gh 7.60 0740 Start Time 7.6 Start Flow (L/min) 9123/08 Stop Date Stop Time 1152 Stop Flow (L/min) 7.6 Pump fault? (circle) No) Yes NA No NA No Yes NA YÆs Yes NA Yes NA MET Station onsite? (circle) No No No Yes ΝÄ **Post** Clear Pre **Post** Clear Pre Clear Pre Post Sample Type (circle) 2nd Clear 3rd Clear 3rd Clear 2nd Clear 2nd Cle 3rd Clear **Field Comments** Cassette Lot Number: 7 198170164 Archive Blank (circle): Yes Archive Blank (circle): Yes No Archive Blank (circle): Yes Volpe: Volpe: Volpe: Entered (LFO): **Entered** Validated Entered Validated **Entered** Validated Completed by ! For Field Team Completion (Provide Initials) QC by: D_{V}

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR

Field Logbook No:	Page No:	19 Sampling D	ate: <u>৭/৯ ५/১ </u>
Address: <u>BNSF-</u> つ		` Owner/Tenant: スペット	
Pusiness Name: <u></u>	A		
Land Use: Resident	tial School Commerci	al Mining Roadway	Other (Zow)
	M Other <u>EMR</u> Names:		
Person Sampled/Co.	Name: Mattenz 17	EMR SSN: 2806	Task: Onlooker/Trispesser
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID 1	BA- 00049		
Location ID	AD-005568		
Sample Group	Property		
Location Description	MP-1339.8		
Category (circle)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor /	Indoor Outdoor
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm 37mm
Pore Size (circle)	TEM45 PCM- 0.8	TEM45 PCM-0.8/	TEM-45 PCM-0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal/NA	Rotometer DryCal NA
Pump ID Number	4100		
Flow Meter ID No.	UFB-65		
Start Date	9/23/08 9/24/08		
Start Time	0907		
Start Flow (L/min)	2.8		
Stop Date	9/24/68		
Stop Time	1359	/	
Stop Flow (L/min)	2.7	<u>/-</u>	
Pump fault? (circle)	Ne Yes NA	No Yes NA	No Yes NA
MET Station onsite?	No Yes NA	No Yes NA	No Yes NA
Sample Type	TWA EXC (NA)	TWA EXC NA	TWA EXC NA
Field Comments Cassette Lot Number: <u> </u>	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
-	Volpe:	Volpe:	Volpe:
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion (Provide Initials)

Completed by MU QC by DW

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR

Field Logbook No:	<u> </u>	19 Sampling D	ate: <u>৭/১৭/০১</u>
Address: BNSF.	-Row		
ੇusiness Name: <u>\</u>			
Land Use: Resident	ial School Commercia M Other EMR Names:_	1	Offier ($2\sigma\omega$)
	Name: <u>Amanda Thorton</u>		Task: Trespasser
- Croon Campicarco. 1			
Data Item	Cassette 1	Cassette 2	Cassette 3
Index ID M	14/05/BA- 00050		
Location ID	AD-005568		
Sample Group	Property		
Location Description	MP-1339.5		
Category (circle) (FS FB-(field blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	FS FB-(field/blank) LB-(lot blank)
Matrix Type (circle)	Indoor Outdoor	Indoor Outdoor	Indoor / Outdoor
Filter Diameter (circle)	25mm 37mm	25mm 37mm	25mm / 37mm
Pore Size (circle)	TEM- 45 PCM- 0.8	TEM45 PCM- 0.8	TEM45 PCM- 0.8
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	4099	9/0	
Flow Meter ID No.	UFB-65		
Start Date	9/24/08		
Start Time	0907		
Start Flow (L/min)	2.8		
Stop Date	9/24/08		
Stop Time	1460	<u> </u>	
Stop Flow (L/min)	2.7		
Pump fault? (circle)	No Yes NA	No Yes / NA	No Yes NA
MET Station onsite?	No Yes NA	No Yes NA	No Yes NA
Sample Type	TWA EXC (NA)	TWA EXC NA	TWA EXC NA
Field Comments		·	
Cassette Lot Number: <u>7198(าอเ</u> ษฯ	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
	Volpe:	Volpe:	Volpe:
intered (LFO)	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion	Completed by /u_	OC by D/
(Provide Initials)	Completed by 14c	QC by DW

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Sampling Date: 9/24/08 Field Logbook No: Page No: ___ Address: BNSF-Row Owner/Tenant: BNSF Rusiness Name: NA ∟and Use: Residential School Commercial Mining Roadway Other () Row) Sampling Team: CDM Other EMR Names: Matt Lenz Person Sampled/Co. Name: Amanda Thorbon / EMR SSN: 4491 Task: Trespasser ML 9/24/08 Cassette 2 Cassette 3 Data Item Cassette 1 Index ID **BA- 00051** Location ID AD-005568 Sample Group Location Description MP-1339.5 ES FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) FS FB-(field blank) LB-(lot blank) Category (circle) Outdoor Outdoor Matrix Type (circle) Indoor Indoor Outdoor Indoor Filter Diameter (circle) 25mm 37mm 25mm 37mm 25mm 37mm Pore Size (circle) PCM-0.8 TEM- .45 TEM- .45 TEM- 45 PCM- 0.8 PCM- 0.8 DrvCaL / NA Rotometer DryCal NA Rotometer Rotometer DrvCal NA Flow Meter Type (circle) Pump ID Number 4098 Flow Meter ID No. UFB-65 Start Date 9/24/08 0907 Start Time Start Flow (L/min) 2.7 Stop Date 9/24/08 Stop Time 1400 Stop Flow (L/min) Γ (QM) Yes NA NA No Yes NA Pump fault? (circle) No ⟨Υes} MET Station onsite? No NA No Yes NA No Yes NA (NA) EXC TWA Sample Type **TWA EXC TWA** NA. **EXC** NA Field Comments Cassette Lot Number: 7198170164 Archive Blank (circle): Yes Archive Blank (circle): Yes No Archive Blank (circle): Yes Volpe: Volpe: Volpe:

For Field Team Completion	Completed by	QC by
(Provide Initials)	Completed by HL	QC by

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Validated

Sheet No.: SA-<u>008687</u>

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Address: BNSF ROW usiness Name: All Land Use: Residential School Sampling Team: CDM (Office) EMR Names: Tohn Short, Date Wolch Data Item Cassette 1 Index ID Ind		<u>a</u>	Pa	age No:			Sampling D		14108	
Land Use: Residential School Commercial Mining Roadway Other (ROW) Data Item Cassette 1 Cassette 2 Cassette 3	Address: <u>BNSF</u>	ROW			Own	er/Tenan	t: <u>RN2</u> t			
Data Item Cassette 1 Cassette 2 Cassette 3	usiness Name: M	.}					_		Day /	,
Data Item							Roadway	Other	(ROW	.)
Index ID	Sampling Team: CDM	M Other L	<u> </u>	Names:_	John	Sharry	Dave u	reich		
Location ID SP- 138456 SP- 138457 SP- 138458	Data Item		Cassette			Cassett	e 2	1) 4	Cassette	3
Sample Group Location Description MP-1339.5 AP-138458 MP-1339.5 AP-1339.5 FB-(field blank) BB-(prep-dry blank) DB-(prep-dry blank) DB-(Index ID Q^{l}) BA-	00052	2	of 2 to	Δ- 000	053	9 ⁷² / B /	A- 000 !	54
Location Description MP-1339.5	Location ID]/SP- $:$	13845	6		- 1384	457 _	SP-	13845	8 _
Category (circle)	Sample Group	trope	erty		Frop	erty		Prop	erly	
LB-(lot blank) DB-(prep-dry blank) blank)	Location Description	MP-	1 1339. <i>5</i>	<u> </u>	MF	?-1339.	5	MP-1	339.5	
Matrix Type (circle) Indoor Outdoor NA I	Category (circle)		•	•		•	,		•	
Filter Diameter (circle) 25mm 37mm 25mm 25mm 37mm 25mm 2	Matrix Type (circle)	0					> NA			
Pore Size (circle) Previously Collected		25mm		1				25mm		
GPS Status (circle) Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal	VII.			0.8)	`				and the same of th	0.8
Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample	10 4 ili		,	. ()				
Not Collected-not required for sample GPS File (fill in or circle) Filename: BNSF-ROW NA Filename Not Collected-not required for sample GPS File (fill in or circle) Filename: BNSF-ROW NA Filename Not Collected-not required for sample Not Collected-not required Not Collected-not required for sample Not Collected-not required Not Collected-not required for sample Not Collected-not required Not Collected-not required Not Collected-not required Not Collected not not required Not Collecte		1			,					
Second Filename: BNSF-ROW NA Filename BNSF-ROW NA Filename: BNSF-ROW NA Recomments DryCal NA Recomments NA Recomments NA Recomments Recommendation					l	_		1		
Pump ID Number COS 0 2 3 6 5 GUO 836/1 Flow Meter ID No. PFKS - I PFKS - I PFKS - I Start Date 9 1 2 4 10 8 9/2 4/08 9/2 4/08 Start Time 0909 0910 0911 0911 Start Flow (L/min) 7.6 7.6 7.6 7.6 Stop Date 9/2 4/08 9/2 4/08 9/2 4/08 Stop Flow (L/min) 1.6 1.24 1.24 1.24 Stop Flow (L/min) 7.6 7.6 7.6 7.6 Pump fault? (circle) (b) Yes NA No Yes NA No Yes NA No Yes NA MET Station onsite? (circle) No Yes NA No Yes NA No Yes NA No Yes NA Sample Type (circle) Pre Post Clear 2 nd Clear 3	GPS File (fill in or circle)									
Flow Meter ID No. PFKS - 1 PFKS - 1 PFKS - 1 PFKS - 1 Start Date 9 24 08 9 24 08 Start Time 0909 0910 0911 0911 Start Flow (L/min) 7.6 7.6 7.6 Stop Date 9 24 08 9 24 08 Stop Time 124 124 124 124 124 124 Stop Flow (L/min) 7.6 7.6 7.6 124 124 Stop Flow (L/min) 7.6 7.6 7.6 124 124 124 Pump fault? (circle) 186 186 186 186 186 186 186 186 186 Sample Type (circle) 186 186 186 186 186 186 186 186 186 Sample Type (circle) 186 186 186 186 186 186 186 186 186 186 Sample Type (circle) 186	Flow Meter Type (circle)	Rotometer	DryCal	NA	Rotomete	DryC	al NA	Rotometer	DryCal	NA
Flow Meter ID No. PFKS - 1 PFKS - 1 PFKS - 1 PFKS - 1	Pump ID Number	0080	2365		64	01		8361		
Start Date 9 / 2 4 / 0 8 9 / 2 4 / 0 8 Start Time 0 9 0 9 0 9 10 0 9 11 Start Flow (L/min) 7 . 6 7 . 6 7 . 6 7 . 6 9 7 / 2 4 / 0 8 Stop Date 9 / 2 4 / 0 8 9 / 2 4 / 0 8 Stop Time 1 2 4 7 12 12 12 12 12 12 12 12 12 12 12 12 12	Flow Meter ID No.			_	PFKS	-1	_		-1	_
Start Time	Start Date	91241	08		9/24/	 28				
Stop Date 9/24/08 9/24/08 Stop Time 1247 1240 1240 1240 1240 1240 1240 1240 1240	Start Time	0909	·							e e
Stop Flow (L/min) 7.4 Pump fault? (circle) No Yes NA No Yes NA No Yes NA No Yes NA Sample Type (circle) Pre Post Clear 2nd Clear 3nd Clear (A) Field Comments Cassette Lot Number: 1198170164 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes No Fintered (LEO): Volpe: Volpe: Volpe: Volpe:	Start Flow (⊔min)	7.6			7.6			7.6		
Stop Flow (L/min) 7.4 Pump fault? (circle) No Yes NA No Yes NA No Yes NA No Yes NA Sample Type (circle) Pre Post Clear 2nd Clear 3nd Clear (A) Field Comments Cassette Lot Number: 1198170164 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes No Fintered (LEO): Volpe: Volpe: Volpe: Volpe:	Stop Date	9/24/0	8		9/24/6	 s&		9/24/0	8	
Pump fault? (circle) No Yes NA No Yes No	Stop Time	1243						1246		
MET Station onsite? (circle) No Yes NA No Yes NA No Yes NA Sample Type (circle) Pre Post Clear 2nd Clear 3nd Cl	Stop Flow (L/min)	7.4			7.6					
Sample Type (circle) Pre Post Clear 2nd Clear 3nd Clear	Pump fault? (circle)	(Ng)	res N.	A	Ne	Yes	NA		Yes N	٩
Field Comments Cassette Lot Number: 1198170164 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Volpe: Volpe: Volpe: Volpe: 2nd Clear 3rd	MET Station onsite? (circle)	No ((es N.	Α .	No	(Yes)	NA	No (Yes N	٩
Cassette Lot Number: ना १९६७७ Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes No Volpe: Volpe: Volpe:	Sample Type (circle)									
Number: 1198170164 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes No Volpe: Volpe:	Field Comments	_								
Entered (LEO): Volpe: Volpe: Volpe:		Archive Blan	ık (circle): Y	es No	Archive Bla	ank (circle):	Yes No	Archive Blar	nk (circle): Ye	es No
	Entered (LFO):	Volpe:			Volpe:				Validated	

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	Page No:	20 Sampling D	ate: <u>9/24/02</u>
Address: BNSF (20W	Owner/Tenant: <u>BNS</u>	SF
usiness Name:/\(\)	(A		
Land Use: Resident			Other ROW)
Sampling Team: CDI	M Other \underline{EMR} Names:_	John Starr	مرتابا
Data Item	/ Cassette 1	Cassette 2	Cassette 3
	 	-	
Index ID	∫ ₀ % BA- 00055	//BA- 00056	/BA- 00057
Location ID (h)	SP- 138459	AD-005568	AD-005568
Sample Group	Property	Blank	Blank
Location Description		·	
·	MP-1339.5	MD-13395	MP-1339. 5
Category (circle)	FS FB-(field blank)	FS FB-(field blank)	FS FB-(field blank)
	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)	
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoor) NA	Indoor Outdoor (NA
Filter Diameter (circle)	25mm 37mm	(25mm) 37mm	25mm 37mm
Pore Size (circle)	TEM 45 PCM- 0.8	TEM45 (PCM- 0.8	TEM45 PCM- 0.8
GPS Status (circle)	Collècted	Collected	Collected
	Previously Collected	Previously Collected	Previously Collected
	Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)
	Not Collected-not required for sample	Not Collected- not required for sample	Not Collected- not required for sample
GPS File (fill in or circle)	Filename: BNSF-ROW NA	Filename: NA	Filename: NA
Flow Meter Type (circle)	Rotometer DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	8369		
Flow Meter ID No.	PFK5-1		
Start Date	9/24/08		
Start Time	0911_	nec /	ul/
Start Flow (L/min)	7.6	11/	
Stop Date	9/24/08	9/2400	1/29/08
Stop Time	1246		
Stop Flow (L/min)	7.6		
Pump fault? (circle)	ONO Yes NA	No / Yes NA	No / Yes NA
MET Station onsite? (circle)	No (Yes) NA	No Yes NA	No / Yes NA
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear	Pre Post Clear 2 nd Clear 3 rd Clear NA	Pre Post Clear 2 nd Clear NA
Field Comments			
Cassette Lot			
Number: 7 198170164	Andrew Direct (Street)	And the Block (1911)	A-th- Di I () Y
	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: Page No: 2] Sampling Date: 9/25/08 Address: BASE-Row Owner Tenant: 305F Nusiness Name: WAL cand Use: Residential School Commercial Mining Roadway Other (ROW) Sampling Team: CDM Other <u>EUR</u> Names: ドルス Person Sampled/Co. Name: Mallon / FMR SSN: 2806 Task: onlooker/Tresoake Cassette 1 Cassette 2 Cassette 3 Data Item Index ID ¹ BA- 00060 Location ID AD-005568 Sample Group Location Description MP-134/ FS) FB-(field blank), LB-(lot blank) Category (circle): FS FB=(field blank) LB-(lot blank) ES EB-(feld blank) LB-(lot blank) Outdoor) Matrix Type (circle) Indoor 🗀 Indoor Outdoor Indoor Outdoor 25 m Filter Diameter (circle) 37mm 25mm) -37mm 25mm= 37mm Pore Size (circle) TEM-:45 (PCM-0.8) PCM-0.8 TEM- .45 EM-.45 PCM- 0.8 Rotomete Flow Meter Type (circle) DrvCal ··· Rotometer Rotometer DryCal Pump ID Number 4099 Flow Meter ID No. UFB-65 Start Date 9/25/08 Start Time 0653 Start Flow (L/min) ል .ፍ። Stop Date 9/25/08 Stop Time 1030 Stop Flow (L/min) 2.8 ത Pump fault? (circle) Yes NA No. Yes NA Yes NA MET Station onsite? (Yes) No NA No Yes NA No Yes NĂ Sample Type TWA **EXC** NA) TWA **EXC** TWA EXC NA Field Comments Cassette Lot Number **110811**0169 Archive Blank (circle): Yes No Archive Blank (circle): Yes No Archive Blank (circle): Yes Volpe: Volpe: Volpe: Entered Validated Entered (LFO) Entered Validated Entered Validated

For Field Team Completion (Provide Initials)

Sheet No.: PA: <u>004892</u>

Field Logbook No. 2 Address BUSE ROLL	Page No:			12 (5(0) NA) Pale: <i>[5] a 5 (8</i>	
Land Use: Residential Sci Sampling Team: CDM Other	EM K Names	Medilent	Change of the second		
Person Sampled/Co. Name: K	assette 1	Casse			seite 3
	00061	entra de la companione			
Sample Group Prope	<u>005568</u>				
Location Description	005568				
Category (circle)	d blank) LB-(lot blank)	FS FB-(field blank) LB-(lot blank)	Assembly Sections	ank). LB-(lot blank).
Filter Diameter (circle) 25mm Pore Size (circle): TEM- 45	37mm (PCM-03)	25mm, 37r	M-0.8, _/	25 n /m	Outdoor 37mm PCM- 0.8
Flow Meter Type (circle) (Rotomete). Pump ID: Number 409 8	DryCal NA		9/25/9	//	DryCal NA
Flow Meter ID No. UFB- of Start Date 9/25/00	and the second second second				
Start Time OGS5 Start Flow (L/min) 2.6 Stop Date 9/3					
Stop Date 9/25/6 Stop Time 1040 Stop Flow (L/min) 2.8					
Pump fault? (circle) (No Ye MET Station onsite? No 6		No Yes	NA = /	No Yes	NA F
Sample Type TWA EX	C (M)	TWA EXC	WA	IWA EXC	- NA
Cassette Lot Number: <u>기록하기하다</u> Archive Blank (o	Sircle) Yes No	Archive Blank (circle):	Yes		Activities to the second secon
Volpe:	2011	Volpe:		Archive Blank (circle Zolpe: Intered V	alidated

For Field Team Completion (Provide Initials)

. Completed by

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y Di

Shedand (2/4-004/892)

Field Logbook No. Address Buse	: A : Page No.	A SHEET (FSDS) FOR PERSONAL AIR Sampling Date: 9/25/08 Owney/Tenant: 9/25	
usiness Name	U/A Mala School Comme	reia Minine Readway Other Bore	
Sampling Beam OF	Ma Other EUR Names	EMR SSN:9586 Task Trespassor	
pata item	Cassette 1		
Index ID	BA- 00062		
Location (D	AD-005568		
Sample Group Location Description	AD-cosses Property		
	MP-1341.		
Category (circle)	FB-(field blank) ,LB-(lot blank)	FS. FB-(field blank). LB-(lot blank). FS. FB-(field blank). AB-(lot blank)	io l
Matrix Type (circle)	Indoors (Suidoor)	findoor Outdoor Indoor Outdoor 25mm 37mm 37mm	
Pore Size (circle)	TEM- 45 (CM-0.8)	25mm 37mm 25mm 37mm TEM-45 PCM-0.8 / TEM-45 PCM-0.8	
Flow Meter Type (circle) (Pump ID Number	Potomerey DryCal NA	Rotometer DryCal NA Rotometer DryCal NA	
Flow Meter ID No.	VFB-65	4000	
Start Time	9/25/08 0656		
Staff Flow (Umin) Stop Date	9/25/08		
Stop Time	/63T		
Stop Flow (L/min) Pump fault? (circle)	2.8 Yes NA	No. Yes NA NO. Yes NA	
MET Station onsite? Sample-Type	TWA EXC.	No Yes NA No Yes NA TWA EXC NA	
Field Comments		TWA EXC NA TWA EXC NA	
Cassette Lot Number <u>- 148178164</u>			
Enlered (LFO)	Archive Blank (circle): Yes No-	Archive Blank (circle): Yes No. Volpe: Volpe:	
	Entered Validated	Entered Validated Entered Validated	

For Field Team Completion (Provide Initials)

Completed by KL

ocby DW

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	Page No:		ate: 9/25/08
Address: BNSF Fusiness Name: N		Owner/Tenant: _BNS)]
Land Use: Resident	the contract of the contract o	ial Mining Roadway	Other (ROW)
Sampling Team: CDI	M Other MR Names:	John Stars, Mot Lenz, 5	Dave welch
Data Item	Cassette 1	Cassette 2	JUJO & Cassette 3
Index ID	BA- 00063	BA- 00064	BA- 00065
Location ID	SP-138460	SP-138460	SP-138461
Sample Group	Property	Property	Property.
Location Description	MP-1341	MP-1341	MP-1341
Category (circle)	FS FB-(field blank) LB-(lot blank) DB-(prep-dry blank)	FB-(field blank) LB-(lot blank) DB-(prep-dry blank)	FB (field blank) LB-(lot blank) DB-(prep-dry blank)
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoo NA	Indoor Outdoor NA
Filter Diameter (circle)	25mm 37mm	25mm 37mm 4	25mm 37mm
Pore Size (circle)	TEM- 45 PCM- 0.8	TEM45 PCM- 0.8	TEM45 (PCM- 0.8)
GPS Status (circle)	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected- not required for sample	Previously Collected Not Collected-no signal (3 attempts) Not Collected- not required for sample
GPS File (fill in or circle)			Filename: BASF-ROW NA
Flow Meter Type (circle)	Restorneter DryCal NA	Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	709063	6401	8369
Flow Meter ID No.	PFKS-1	PFKS-1	PFKS-1
Start Date	9125108	9/25/08	9/25/68
Start Time	8570	0728	8250
Start Flow (L/min)	1,6	7.6	7,6
Stop Date	9/25/08	9/25/08	9/25/08
Stop Time	1007	1002	1003
Stop Flow (L/min)	2.40	7.6	7.6
Pump fault? (circle)	No Yes NA	No Yes NA	No Yes NA
MET Station onsite? (circle)	No (Yes) NA	No (Yes) NA	No (Yes) NA
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 nd Clear	Pre Post Clear 2 nd Clear 3 nd Clear	Pre Post Clear 2 nd Clear 3 rd Clear
Field Comments	Cap put on	Co Located	
Cassette Lot Number: 719817664	running stick tear in fille Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR STATIONARY AIR

Field Logbook No:	A Page No:		ate: 9/25/08
Address: BNSF	garage and the second s	Owner/Tenant:BNS	}
usiness Name: N	The second secon		P Paul
Land Use: Resident			Other ROW)
Sampling Team: CDI	Names:	John Starr, Matt L	enz, the welch
Data Item	Cassette 1	alfolo Cassette 2	9/38/08 Cassette 3
Index ID	BA- 00066	BA- 00067	BA- 00068
Location ID	SP-138462	57-138463	58-138463
Sample Group	Property	Property	Property
Location Description			
	MP-1341	MP-1341	MP-134)
Category (circle)	FS FB-(field blank)	FB-(field blank)	FB-(field blank)
in a compression of the second se	LB-(lot blank)DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)	LB-(lot blank) DB-(prep-dry blank)
Matrix Type (circle)	Indoor Outdoor NA	Indoor Outdoo NA	Indoor Outdoor NA
Filter Diameter (circle)	25mm 37mm	25mm) 37mm (25mm 37mm
70.10	TEM- 45 PCM- 0.8	TEM- 45 (CM- 0.8	TEM45 SM- 0.8
GPS Status (circle)	Collected	Collected	Collected
	Previously Collected	Previously Collected	Previously Collected
	Not Collected-no signal (3 attempts) Not Collected-not required for sample	Not Collected-no signal (3 attempts) Not Collected- not required for sample	Not Collected-no signal (3 attempts) Not Collected- not required for sample
GPS File (fill in or circle)	Filename: BNSF-ROW NA		Filename: BNSF-ROW NA
Flow Meter Type (circle)	Rotometer DryCal NA (Rotometer DryCal NA	Rotometer DryCal NA
Pump ID Number	8361	0802362	0802365
Flow Meter ID No.	PFKS-1	PFKS-1	PFKS-1
Start Date	9/25/08	9/25/08	9/25/08
Start Time	0725	0725	0725
Start Flow (L/min)	7.6	7.6	7.0
Stop Date	9/25/08	9/25/08	9/25/08
Stop Time	0959	1000	1000
Stop Flow (L/min)	7.4	7.6	7.4
Pump fault? (circle)	Yes NA	Yes NA	Yes NA
MET Station onsite? (circle)	No Yes NA	No (ES) NA	No (Es) NA
Sample Type (circle)	Pre Post Clear 2 nd Clear 3 rd Clear	Pre Post Clear 2 nd Clear 3 nd Clear (67A)	Pre Post Clear 2 nd Clear 3 rd Clear
Field Comments			co located
Cassette Lot			with BA-00067
Number: 7198170164			33.77 03-0006
was a second of the second	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No	Archive Blank (circle): Yes No
Entered (LFO):	Volpe:	Volpe:	Volpe:
·	Entered Validated	Entered Validated	Entered Validated

For Field Team Completion (Provide Initials) Completed by: ML QC by:

Sheet No.: PA= 004894 LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR PERSONAL AIR Field Logbook No: 2 Page No: 23 Sampling Date: 9/25/68 Owner/Tenant BUSE Commercial: Mining Roadway Other (Row) Cassette 2 Cassette 3 FS FB-(field blank) LB-(lot blank) Outdoor Indoor Outdoor 37mm 25mm-37mm PCM- 0.8 TEM- .45 PCM-0.8 DryCal · NA Rotometer DryCal

Sampling Team: CDM Other EMR Names: Note: Person Sampleo/Co-Name - Data Item Cassette 1 Index ID **BA-00069** Location ID 4D-005568 Sample Group Location Description Blank FS (B-(feld blank) LB-(lot blank) Category (circle) FS FB-(field blank) LB-(lot blank) Matrix Type (circle) Indeor (Outdoor) Indoor Filter Diameter (circle) 25mm) 37mm 25mm Pore Size (circle) TEM- .45 PCM- 0.8 TEM- .45 Flow Meter Type (circle) Rotometer DryCal Rotometer Pump ID Number Flow Meter ID No. Start Date Start-Time Start Flow (L/min) Stop Date Stop Time Stop Flow (L/min) Pump fault? (circle) No NA No⊹ NA No Yes NA MET Station onsite? No ÑÀ Νō Yes NA Sample Type: TWA NΑ TWA NΑ EXC NA EXC Field Comments Cassette Lot Number: 115176\64 Archive Blank (circle): Yes Archive Blank (circle). Yes No Archive Blank (circle): Yes No Volpe: Volpe: Volpe: Entered (LFO) Entered Validated Entered Validated Entered Validated

> For Field Team Completion ac by $\mathcal{D} \mathcal{N}$ Completed by ML (Provide Initials)

Address BNSF ROW

- School:

usiness Name: ベム Land Use Residential



APPENDIX C

FIELD SAMPLING DATA SHEETS - SOIL

		AIA SHEET (FSDS) F	
Field Logbook No:	Page No:	Sampling D	Date: 7-14-08
		Owner/Tenant: <u>S</u>	NSF
Business Name:			
Land Use: Resident		al Mining Roadway	
Sampling Team: CDN	M Other X Names:	DAVIO WELCH AND.	AMANDA THORNTON-E
Data Item	Sample 1	Sample 2	Sample 3
Index ID) RR- 00001	RR- 00002	RR- 00003
Location ID	SP- 138460	SP- 138461	SP- 138462
Sample Group	MP 2-12-18 Property	Property	PROPERT
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1312	Front yard Side yard Driveway Other MP 1312	Back yard Front yard Side yard Driveway Other
Category (circle)	FS FD of	FS FD of EB LB	FS FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: NA	Filename: NA	Filename: NA
Sample Time	1037 (MOUNTAINTIME)	(048 (MD)	1057 (MT)
Top Depth (inches below ground surface)	0	0	0
Bottom Depth (inches below ground surface)	5"	4"	6"
Field Comments	BD	BD	BD
Note if vermiculite is visible in sampled area	None	W	LOW
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL No: _____ Sampling Date: 9-17-08

Owner/Tenant: BHSE Page No: _____ Field Logbook No: ddress: BHSF Row Business Name: School Mining Roadway Other (Land Use: Residential Commercial Names: DAVID WELCH AND AMANDA THORNTON -EM Sampling Team: CDM Other Sample 2 5 9 10 Sample X 4 2 17 23 Sample 8 6 37 Data Item Index ID RR- 00005 RR- 00004 ĴRR- 00006 Location ID SP- 138463 SP- 138464 SP- 138465 Sample Group PROPERTY PROPERTY PROFERTS Back yard Back yard Back yard **Location Description** Front yard Front yard Front yard (circle) Side yard Side yard Side vard Driveway 13/2 Driveway MP 1312 Driveway Other MP 1312 FS) FS) Category (circle) FD of FD of FD of ΕB EB EB LB Surface Soil Surface Soil Matrix Type Surface Sell (Surface soil unless other Other Other Other wise noted) Grab) Grab Grab Type (circle) Comp. # subsamples Comp. # subsamples Comp. # subsamples GPS Status (circle) Collected Collected Collected Previously Collected Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: Filename: Filename: 1105 (mT) Sample Time 1(13 mT) 1122 (MT) Top Depth (inches below ground surface) Bottom Depth (inches 6" below ground surface) Field Comments BD-Note if vermiculite is visible in sampled area LOW LOW NONE Volpe: Volpe: Volpe: Entered (LFO) Entered___ Validated Entered Validated Entered Validated

For Field Team Completion (Provide Initials) Completed by:	QC by:
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LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL Field Logbook No: __/ Pa _____Owner/Tenant: BASE Business Name: ____ N A Other (Kai Land Use: Residential Mining Roadway School Commercial Sampling Team: CDM Other X Names: DAVIO WELCH AND AMANDA THORATON EM Sample 17 7 917 Sample Z B Data Item Index ID ンŔR- 00009 /RR- 00007 **RR- 00008** Location ID SP- 138468 SP- 138466 SP- 138467 Sample Group MoleRA PROPERTY PROPERT Back yard Back yard Back yard Location Description Front yard Front yard Front yard (circle) Side yard Side yard Side yard Driveway MP 1312 Driveway Other __MP /3/2_ Driveway MP1312 Other Fs) FS Category (circle) FD of FD of FD of EB EB EB LB LB Surface Sol Matrix Type Surface Soil Surface Soil (Surface soil unless other Other-Other Other wise noted) Type (circle) Grab \ Grab) Gráb Comp. # subsamples Comp. # subsamples Comp. # subsamples GPS Status (circle) Collected Collected Collected **Previously Collected** Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: Filename: Sample Time 1179 (MT) (TM) Top Depth (inches below ground surface) Bottom Depth (inches below ground surface) (BALLAST) **Field Comments** BD-BD-Note if vermiculite is visible in sampled area MONE NONE Volpe: Volpe: Volpe: Entered (LFO) Entered Validated Entered Entered Validated Validated

For Field Team Completion (Provide Initials)	Completed by:	QC by:

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL Field Logbook No: \ddress: BHSF Row ____ Owner/Tenant: BHSF Business Name: $\nearrow A$ Roadway Other ($\mathcal{L}_{\diamond} \cup$) Land Use: Residential Commercial Mining School Names: DAVIO WELCH AND AMANDA THORNTON - EMR Sampling Team: CDM Other χ Sample 10 Political Sample 2/1 9/11 Sample 2/12 3/12 Data Item Index ID RR- 00010 RR- 00012 RR- 00011 Location ID SP- 138470 SP- 138471 SP- 138469 Sample Group PROFERTY PROCERTY PRSENTY Back yard Back yard Back yard Location Description Front yard Front yard Front yard (circle) Side yard Side yard Side yard Driveway MP 1312 Driveway MP 1312 Driveway Other MP 1312 Fš) FS) Category (circle) FD of fD of FD of EB EB EB LB LB Surface Soil Surface Soil Matrix Type Surface Soil (Surface soil unless other Other Other Other wise noted) Grab Grab Type (circle) Grab Comp. # subsamples Comp. # subsamples Comp. # subsamples GPS Status (circle) Collected Collected Collected Previously Collected Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: Filename: Sample Time 1156 (MT) 1204 (MT) 1214 (Mr) Top Depth (inches below ground surface) Bottom Depth (inches below ground surface) Field Comments BD-BD-Note if vermiculite is visible in sampled area Volpe: Volpe: Volpe: Entered (LFO) Entered Entered Entered Validated Validated Validated

For Field Team Completion (Provide Initials)	Completed by:	QC by:
For Field Team Completion (Provide Initials)	Completed by:	QC by:

LIE	BBY FIELD SAMPLE D	DATA SHEET (FSDS) F	OR SOIL , 7
Field Logbook No:	Page No: _	Sampling D	Date: 7-14-08
		Owner/Tenant: BM	SF
Business Name:			۵ ۱
Land Use: Resident	tial School Commerc	ial Mining Roadway	Other (Row)
Sampling Team: CDN	/		AMANDA THORNTON-EMA
Data Item	Sample 13 9 200	2) Sample 2/4 7-1	Sample 3 15 9 17
Index ID $\hat{V}_{_{\!A}}^{^{$	RR- 00013	RR- 00014	₩ RR- 00015
Location ID $\eta^{\lambda^{t}}$	SP- 138472	SP- 138473	SP- 138474
Sample Group	PROLENTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1312	Back yard Front yard Side yard Driveway Other MP 1312	Back yard Front yard Side yard Driveway Other MP 1312
Category (circle)	FS) FD of EB LB	FD of EB LB	FS FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: NA	Filename: NA	Filename: NA
Sample Time	1233	1254	1316
Top Depth (inches below ground surface)	0		
Bottom Depth (inches below ground surface)	4"	7:	4"
Field Comments	BD	BD	BD
Note if vermiculite is visible in sampled area	NONE	LOW	HONE
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

For Field Team Completion (Provide Initials)	Completed by:	QC by:
TOTAL TOUR COMPLETE (FIGURE)	completed by.	ao by.

Field Logbook No:	Page No:	Sampling D	Date: <u>09-18</u> 5-085
ddress: MP 133	15 91808 BNSF ROW	Owner/Tenant: BNS	_
Business Name: M/			
Land Use: Residenti	ial School Commerci	ial Mining Roadway	(Other (ROW))
Sampling Team: CDN	M Other FMR Names:]	DAVE WELCH & AMAN	DATHORNION
Data Item	Sample 1	Sample 2	Sample 3
Index ID ให้ ผ [ู] ้	RR- 00016	RR- 00017	RR- 00018
Location ID	SP- 138475	SP- 138476	SP- 138477
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1331.5	Back yard Front yard Side yard Driveway Other MP 1331,5	Back yard Front yard Side yard Driveway Other 1331,5
Category (circle)	ES FD of EB LB	FS FD of EB LB	FS) FD of EB LB
Matrix Type ((Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil) Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF RCW NA	Filename: PONSF RCW NA	Filename: BNSF ROW NA
Sample Time	1107	1115	1118
Top Depth (inches below ground surface)	0		
Bottom Depth (inches below ground surface)	4"	4"	4"
Field Comments Note if vermiculite is visible in sampled area	NONE	1865 AD-005568 NONE	NONE
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No:	Page No:	9020 Sampling D	oate: <u>09 - 18 <i>- 08</i> </u>
\ddress: \dp 33	1. STEROR BNSFROW	Owner/Tenant: BNSF	<u> </u>
പ്പsiness Name: <u>\</u>	<u> </u>		
Land Use: Resident		ial Mining Roadway DAVE WELCH & A	
Data Item	Sample 1	\$ample 2	Sample 3
Index ID	RR- 00019	RR- 00020	RR- 00021
Location ID	SP- 138478	SP- 138479	SP- 138480
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1331.5	Back yard Front yard Side yard Driveway Other MP 1331.5	Back yard Front yard Side yard Driveway Other MP 1331.5
Category (circle)	FS FD of EB LB	FS FD of EB LB	FS) FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface-Soit Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle) (Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename: BNSF ZOW NA	Filename: BNSF ROW NA
Sample Time	1142	<u> </u>	1260
Top Depth (inches below ground surface)		0	0
Bottom Depth (inches below ground surface)	4"	4"	4"
Field Comments Note if vermiculite is visible in sampled area	HONE 1918 NONE	PD-00C668	LOW
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

For Field Team Completion (Provide Initials) Completed by: QC by: SC

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No:	Page No: 3	Sampling D	Date: <u>09-18-08</u>
ddress: MP 133	Page No: 6 BNSF ROW	Owner/Tenant: _BNSに	
dusiness Name: <u>√</u>		·	
Land Use: Resident	tial School Commerci M Other EMR Names:_	al Mining Roadway	
Sampling ream. Cor			DAT HOKIO OIV
Data Item	a ♂ / Sample 1	Sample 2	Sample 3
Index ID	RR- 00022	RR- 00023	RR- 00024
Location ID	SP- 138481	SP- 138482	SP- 138483
Sample Group	PROPERTY	PROPERTY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1331	Back yard Front yard Side yard Driveway Other MP 133 .5	Back yard Front yard Side yard Driveway Other
Category (circle)	FS FD of EB LB	FD of EB LB	FS FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil (Surface Soil Other	Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BIVSF RCVV NA	Filename: BINSF ROW NA	Filename: NA
Sample Time	1213	1227	
Top Depth (inches below ground surface)	0		
Bottom Depth (inches below ground surface)	914.08	and 6"	
Field Comments Note if vermiculite is visible in sampled area	41909 LOW	18-08 LOW	BD
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

For Field Team Completion (Provide Initials) Completed by: QC by:

Field Logbook No:	Page No:	እልኋΨ Sampling D	Date: 69-19-08
Address: BNSF RE		Owner/Tenant: BNS	
⊿usiness Name:\	UA-		
Land Use: Resident	•	DAVEWELCH & AMAR	DA THERNTON
Data Item	Sample 1	Sample 2	Sample 3
Index ID	RR-/00025	RR- 00026	RR- 00027
Location ID	SP- 138484	SP- 138485	SP- 138486
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other 13305 9-19-0
Category (circle)	FD of EB LB	FD of EB LB	FD of EB LB
Matrix Type ((Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF R.OW NA	Filename: BNSFRW NA	Filename BIVSF ROW NA
Sample Time	0754	0804	0813
Top Depth (inches below ground surface)	<i>O</i>	0	0
Bottom Depth (inches below ground surface)	6"	<u> </u>	6"
Field Comments Note if vermiculite is visible in sampled area	9-19-18 NONE	BB-AD-005568 9-19-25 NONE	4-19-08 4-19-08 Horle
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No: Page No: 24 Sampling Date: 09 19-08 Address: BNSF ROW Owner/Tenant: BNSF			
\ddress:	sinsf eaw	Owner/Tenant: BNS	
usiness Name: <u>√</u> /			
Land Use: Residen Sampling Team: CD	M Other EML Names:		
Data Item	Sample 1	Sample 2	NOT US Sample 3
Index ID	RR- 00028	RR- 00029	RR- 00030
Location ID	SP- 138487	SP- 138488	SP- 138489
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard , 33/ DW Driveway Other 1330 5 9-19-28	Back yard Front yard Side yard Driveway Other 1330.5 9.00	
Category (circle)	FS FD of EB LB	FS FD of EB LB	FS) FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soll Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNS ROW NA	Filename: BUSF ROW NA	Filename: BNSF ROW NA
Sample Time	<i>⊙</i> 631	0832	6842
Top Depth (inches below ground surface)			\bigcirc
Bottom Depth (inches below ground surface)	6"	3"	34
Field Comments Note if vermiculite is visible in sampled area	11923 NONE	1000 × 10	BB- <u>AD-005568</u> 919-08
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

For Field Team Completion (Provide Initials) Completed by QC by:

Field Logbook No:	Page No:	38 Sampling D	ate: 09-12-08
'ddress: BNSF		Owner/Tenant: <u>BNSI</u>	-
战usiness Name: <u></u> ∧	/A		
Land Use: Resident		al Mining Roadway	
Sampling Team: CDN	M Other EMR Names:		WA THORNTON
Data Item	Sample 1	Sample 2	Sample 3
Index ID	7		Net 9
	/RR- 00031	/RR- 00032	and RR- 00033
Location ID	420400	420404	/
	SP- 138490	/ SP- 138491	SP- 138492
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description	Back yard Front yard	Back yard Front yard	Back yard Front yard
(circle)	Side yard	Side yard	Side yard
	Oriveway MP 1329.8	other MP 1329.8	Other MP 1329.8
Category (circle)	<u> </u>	©	©
odlogory (orrolo)	FD of EB	FD of	FD of EB
	LB	LB	LB
Matrix Type	Surface Soil	Sufface Soil	Surface Soil
(Surface soil unless other wise noted)	Other	Other	Other
Type (circle)	Grab	Grab	erab
	Comp. # subsamples	Comp. # subsamples	Comp. # subsamples
GPS Status (circle)	Collected Collected	Collected Collected	Collected Previously Collected
	Previously Collected Not Collected-no signal (3 attempts)	Previously Collected Not Collected-no signal (3 attempts)	Not Collected-no signal (3 attempts)
	Not Collected-not required for sample	Not Collected-not required for sample	Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename: BNSF ROW NA	Filename: BNSF ROW NA
Sample Time	1115	1122	11 28
Top Depth (inches below ground surface)		0	0
Bottom Depth (inches below ground surface)	4"	4"	4"
Field Comments	NONE	30-AD-205568	BO-AD-005568
Note if vermiculite is	Willes I.C.	NONE	9-22-09
visible in sampled area	NOUS	170190	NONE
	-		(4.5.
	Volpe:	Volpe:	Volpe:
Entered (LFO)	Entered Validated	Entered Validated	Entered Validated

Field Logbook No:	Page No: _3	28 & 29 Sampling D	Date: 09-22-08
'ddress: BNSF ROW Owner/Tenant: 3NSF			
ಚusiness Name: <u>N</u> /	14		
Land Use: Resident	ial School Commerci	ial Mining Roadway	
Sampling Team: CDN		DAVE WELCH & LAMAN	DI THORNTON
Data Item	კე ^{ე%} Sample 1	Sample 2	Sample 3
Index ID	o /	RR- 00035	RR- 00036
Location ID	SP- 138493	SP- 138494	SP- 138495
Sample Group	PROPERTY	PROPERTY	PROPERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP (329,8	Back yard Front yard Side yard Driveway Other MP 1329.8	Back yard Front yard Side yard Driveway Other MP1339 : 8
Category (circle)	FS) FD of EB LB	FD of EB LB	FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Softer	Surface Soil Other	Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab . Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 atternpts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSFROW NA	Filename: BINSF ROW NA	Filename: BNSF RCW NA
Sample Time	ALOSH 35-1133	1143	1150
Top Depth (inches below ground surface)	(P)	0	. 0
Bottom Depth (inches below ground surface)	4"	6''	6"
Field Comments Note if vermiculite is visible in sampled area	NONE	921-00 5568 921-08 NONE	LOW LOW
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL Page No: <u>39 2430</u> Sampling Date: <u>09-22-08</u> Field Logbook No: Iddress: BNSF ROW Owner/Tenant: RNSF Business Name: N/A Other Row Land Use: Residential School Commercial Mining Roadway Sampling Team: CDM Other EMP Names: DAVE WELCH & AMANDATHORNION Sample 1 Sample 2 Sample 3 **Data Item** Index ID RR- 00037 RR-00038 NOTU 520 Location ID SP- 138497 SP- 138496 Sample Group PROPERTY PROPERTY Back yard Back yard Back yard Location Description Front yard Front yard Front yard (circle) Side yard Side yard Side yard Driveway MP 1329. Driveway Driveway MP1329.8 MP 1329,8 Other Qther' FS **FS**) Category (circle) FD of FD of FD of EB EB EB LB LB LB Surface Soil Matrix Type Surface Seil Surface Soil (Surface soil unless other Other Other Other wise noted) Grab Grab) Grab) Type (circle) Comp. # subsamples Comp. # subsamples: Comp. # subsamples Collected Collected Collected GPS Status (circle) Previously Collected Previously Collected **Previously Collected** Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample Filename:BNSF ROW Filename: BNSF ROW GPS File (fill in or circle) Filename: BIVSF RC Sample Time 200 Top Depth (inches below ground surface) Bottom Depth (inches below ground surface) ABG- AD-005518 Field Comments Note if vermiculite is NONE visible in sampled area Volpe: Volpe: Volpe:

For Field Team Completion (Provide Initials)	Completed by	QC by: DIW	

Entered

Validated

Entered

Validated

Entered (LFO)

Entered

Validated

Field Logbook No: Page No: 32 Sampling Date: 09-23-08 Owner/Tenant: BNSF				
ddress: BNSF	20W	Owner/Tenant: BNST	·	
Business Name: <u>N/</u>				
Land Use: Resident	School Commerci	al Mining Roadway	Other (ROW)	
Sampling Team: CDN	Other EMF Names:	DAVE WELCH & AMAND	A. THERNTON	
Data Item	Sample 1	Sample 2	Sample 3	
Index ID	<i>f_a </i> RR- 00039	RR- 00040	23 RR- 00041	
Location ID	SP- 138498	SP- 138499	SP- 138500	
Sample Group	PROPERTY	PROPERTY	PROCETY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP +237, B Muna 23 45	Back yard Front yard Side yard Driveway Other MP 337 B	Back yard Front yard Side yard Driveway Other MP 13378	
Category (circle)	FD of EB LB	FD of EB LB	FS) FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other	
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename: 13NSF ROWNA	Filename BNSF ROW NA	
Sample Time	<u>' 683 </u>	0838	M10948 0848	
Top Depth (inches below ground surface)	0	0	6	
Bottom Depth (inches below ground surface)	lo"	10"	6"	
Field Comments Note if vermiculite is visible in sampled area		186-AD-004818 423-00 NONE	PRO-AD-COSSLB PROP LOW	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	

For Field Team Completion (Provide Initials) Completed by QC by:					
	For Field Team Completion (Provide Initials)	Completed by	QC by:	DW	

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No:	Page No:	33 Sampling D	ate09-23-08
ddress: BNSFR	2W	Owner/Tenant: <u>BNSF</u>	
ப் Business Name:	/A		
Land Use: Residenti	al School Commerci	al M ining Roadway	Other (RCW)
Sampling Team: CDM	Mother EMC Names:	DAVE WELCH & AMANO	A THORINTOIN
Data Item	Sample 1	Sample 2	Sample 3
Index ID	RR- 00042	RR- 00043	RR- 00044
Location ID $\chi^{\hat{V}}$	SP- 138501	SP- 138502	SP- 138503
Sample Group	PROPERTY	PROPERTY	PRCIERTY
Location Description (circle)	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other 1337B	Back yard Front yard Side yard Driveway Other 337 3
Category (circle)	FS FD ofEB	FS FD of EB LB	FD of EB LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil) Other	Surface Soil) Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename: BNST- RCW NA	Filename: BVSF ROW NA
Sample Time	0856	0913 14 0924	0913
Top Depth (inches below ground surface)	0	0	0
Bottom Depth (inches below ground surface)	L"	64	6.
Field Comments Note if vermiculite is visible in sampled area	LOW	100 AD -005568 927-08 WW	88-40-005568 92301
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated

For Field Team Completion (Provide Initials) Completed by:

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL Page No: 34 Sampling Date: 09-23-08 Field Logbook No: ddress: BNSF Row Owner/Tenant: BNSF dusiness Name: ► A Other (Row Roadway Land Use: Residential School Commercial Mining Sampling Team: CDM Other FMR Names: DAVE WELCH & AMANDA THORNYOW Data Item Sample 1 Sample 2 Sample 3 Index ID %RR- 00046 RR- 00045 Location ID SP- 138504 SP- 138505 Sample Group PROPERTY PROPERTY Back yar Back yard Back yard Location Description Front yard Front yard Front yard (circle) Side yard Side yard Side yard Driveway Driveway Driveway 1337B Other) MP 1337B Other) 133 Other) FS) FS.>> FS\ Category (circle) FD of FD of FD of EB EB EB LB LB LB Matrix Type Surface Soil Surface Soil Surface Soil (Surface soil unless other Other Other Other wise noted) Grab Grab) Grab Type (circle) Comp. # subsamples Comp. # subsamples Comp. # subsamples Collected) Collected Collected GPS Status (circle) Previously Collected Previously Collected **Previously Collected** Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: BNSF ROW Filename RNSF ROW Filename: BY SE ROW NA Sample Time Top Depth (inches below ground surface) Bottom Depth (inches below ground surface) Field Comments 9.33 08 92308 9-23-08 Note if vermiculite is visible in sampled area Volpe: Volpe: Volpe: Entered (LFO) Entered Validated Entered Validated Entered Validated

Completed by:

For Field Team Completion (Provide Initials)

QC by:

vs 10507

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No:	Page No:	378 38 Sampling D	Pate: 9-24-08	
\ddress: 13NSF Row Owner/Tenant: BNSF				
Business Name: N	1/A			
Land Use: Resident	tial School Commerci	al Mining Roadway	Other (Row)	
Sampling Team: CDM	M Other EMI Names:	DAVE WELCH & AMAMOR	+ THORNTON	
Data Item	1 un Sample 1	Sample 2	Manier Sample 3	
Index ID	RR- 00047	RR- 00048	RR- 00049	
Location ID	SP- 138506	SP- 138507	SP- 138508	
Sample Group	PROPERTY	PROPERTY	PROPERTY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other) 서우 (3월, 5	Back yard Front yard Side yard Driveway Other 내가 133억 호	Back yard Front yard Side yard Driveway Other MP13395	
Category (circle)	FD of EB LB	FS) FD of EB LB	FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Cother	Surface Soil Other	
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected) Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename BNS ROWNA	Filename: 3NSP ROW NA	Filename: BNSF ROW NA	
Sample Time	0955	1002	1011	
Top Depth (inches below ground surface)	0	0	0	
Bottom Depth (inches below ground surface)	4"	6"	6"	
Field Comments Note if vermiculite is	198-AD-005568	194-00 -00556.8	BD-AD-004428 9-2400 10340	
visible in sampled area	NONE	NOVE	NOVE	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	
For F	ield Team Completion (Provide Initials)	Completed 99 QC by:	DW	

vs 10507

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No: Page No: 38 & 39 Sampling Date: 9-24-08				
ddress: 3NSF R		0 7		
Business Name: 1	(A-			
	tial School Commerc M Other <u>FMR</u> Names:	DAVE WELCH ST AMAN		
Data Item	Sample 1	Sample 2	Sample 3	
Index ID	RR- 00050	RR- 00051	RR- 00052	
Location ID	SP- 138509	SP- 138510	SP- 138511	
Sample Group	PROPERTY	PROPERTY	PIZOPERTY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1339.5	Back yard Front yard Side yard Driveway Other MP 1339.5	Back yard Front yard Side yard Driveway Other	
Category (circle)	FS) FD of EB LB	FS FD of EB LB	FS FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil 'Other	
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename BNSF ROW NA	Filename: BNSF RCM NA	Filename: BNSFROW NA	
Sample Time	1018	1027	1037	
Top Depth (inches below ground surface)	0	0	0	
Bottom Depth (inches below ground surface)	4"	6"	6"	
Field Comments Note if vermiculite is visible in sampled area	18-AD-006568 9-24-60	100 DOSS 168	40408 LOW	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	
			ni l	

For Field Team Completion (Provide Initials) Completed by QC by: DW

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL Field Logbook No: 'ddress: BNSF ROW Owner/Tenant: BN SF ಚusiness Name: NA Land Use: Residential Other 200 School Commercial Mining Roadway Sampling Team: CDM Other CM2 Names: DAVE WELCH & AMANDATHORNTON **Data Item** Sample 2 Sample 1 Sample 3 Index ID RR- 00053 RR- 00054 Location ID SP- 138512 SP- 138513 Sample Group PROPERTY PROPERTY Back yard Back yard Back yard Location Description Front yald 4 Front yard Front yard (circle) Side yard Side yard Side yard **Driveway** Driveway **Driveway** Other MP 1339,5 other) MP 1339.5 Other FS) FS) FS Category (circle) FD of _____ FD of _____ FD of EB EB LB LB LB Matrix Type Surface Soil Surface Soil Surface Soil (Surface soil unless other Other Other Other wise noted) Type (circle) Grab) Grab Comp. # subsamples Comp. # subsamples Comp. # subsalmples Collected Collected) GPS Status (circle) Collected Previously Collected Previously Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-no signal (3 attempts) Not Collected-not required for sample Not Collected-not required for sample Not Collected-not required for sample GPS File (fill in or circle) Filename: BNSF ROW Filename: BNSF ROW Filename: BNSF ROW Sample Time 1047 Top Depth (inches below ground surface) Bottom Depth (inches below ground surface) Field Comments BD-Note if vermiculite is visible in sampled area Volpe: Volpe: Volpe: Entered (LFO) Entered Validated Entered Validated Entered Validated QC by: For Field Team Completion (Provide Initials) Completed by:

Field Logbook No: Page No: Sampling Date: 9 - 24 - 08				
'ddress: BNF ROW Owner/Tenant: BN SF				
usiness Name: <u>١٧/</u>			>	
Land Use: Resident Sampling Team: CDN	ial School Commerci M Other <u>EMR</u> Names: j	al Mining Roadway DAVEWEZCH & AMAND		
Data Item	Sample 1	Sample 2	Sample 3	
Index ID	RR- 00055			
Location ID	SP- 138514			
Sample Group	PROPERTY			
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1339.5	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other	
Category (circle)	FS) FD of EB LB	FS FD of EB LB	FS FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other	
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename: BN SF ROW NA	Filename: NA	Filename: NA	
Sample Time	1110			
Top Depth (inches below ground surface)	0			
Bottom Depth (inches below ground surface)	5"			
Field Comments Note if vermiculite is visible in sampled area	LOW	BD	BD	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Field Logbook No:	1 Page No: 43 Sampling Date: 9-25-08			
\ddress: BINSF R	aω	Owner/Tenant:6 NS[=	·	
dusiness Name: V/	4			
Land Use: Resident	ial School Commerci	al Mining Roadway	Other (ROW)	
Sampling Team: CDN	1 Other EMR_ Names:	DAVE WELCH & AMANG	ATHORNTON	
Data Item	Sample 1	Sample 2	Sample 3	
Index ID	RR- 00056	RR- 00057	RR- 00058	
Location ID	SP- 138515	SP- 138516	SP- 138517	
Sample Group	PROPERTY	PROPERTY	PROPERTY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1341	Back yard Front yard Side yard Driveway MP 1341	Back yard Front yard Side yard Driveway Other MP [34]	
Category (circle)	FS FD of BB LB	FD of EB LB	FS) FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other	
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename: BNSC ROW NA	Filename: BNSE ROW NA	Filename: BNSF ROW NA	
Sample Time	0752	0803	0812	
Top Depth (inches below ground surface)	0	0	0	
Bottom Depth (inches below ground surface)	6.	6"	6"	
Field Comments Note if vermiculite is visible in sampled area	BD-AD-COEFLES ixor	NONE 9508 NONE	1000 00 00 00 00 00 00 00 00 00 00 00 00	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	

For Field Team Completion (Provide Initials) Completed (Provide Initials)

Field Logbook No: Page No: <u>438+44</u> Sampling Date: <u>09-25-08</u>				
ddress: BNSF RC		Owner/Tenant: BNSF		
Business Name: <u>\\</u>	A	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
Land Use: Resident	ial School Commerci	al Mining Roadway	Other Now)	
_		DAVE WELCH & AMAN'S	OF THORNTON	
Data Item	Sample 1	Sample 2	ງ ຊ ^າ Sample 3	
Index ID	k . /	RR- 00060	RR- 00061	
Location ID	SP- 138518	SP- 138519	SP- 138520	
Sample Group	PROPERTY	PROPERTY	PROPERTY	
Location Description (circle)	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other	Back yard Front yard Side yard Driveway Other MP 1341	
Category (circle)	FD of EB LB	FS (FD of EB LB	FS FD of EB LB	
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other	
Type (circle)	Grabo Comp. # subsamples	Grab Comp. # subsamples	Grab Comp. # subsamples	
GPS Status (circle)	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename: 13/NSF RCIV NA	Filename: BNSF ROW NA	
Sample Time	0822	0833	0844	
Top Depth (inches below ground surface)	<u> </u>	0	0	
Bottom Depth (inches below ground surface)	6.	6	6"	
Field Comments Note if vermiculite is visible in sampled area	NON'E	NONE	NONE NONE	
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated	Volpe: Entered Validated	

Field Logbook No:	Page No:	<u>44</u> Sam	pling D	late: 1-25-08
1ddress: BNSF R	ØW	Owner/Tenant:	BNS	F
∂usiness Name: <u>N</u> ∫				3
Land Use: Resident		_	-	Other (ROW)
Sampling Team: CDN	VI Other CMR Names:	DAVEWELCH BA	MAND	ATHGUNTON
Data Item	Sample 1	Sample 2	\longrightarrow	Sample 3
Index ID	RR- 00062		,	
Location ID	SP-138520 SP-138521			
Sample Group	property		-08	1
Location Description (circle)	Back yard Front yard Side yard Driveway Other MP 1341	Back yard Front yard Side yard Driveway Other	<u> </u>	Back yard Front yard Side yard Oriveway Other
Category (circle) 1/25/65	FD of <u>RR-00</u> 061 EB LB	FS FD of LB		FS FD of LB
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other		Surface Soil Other
Type (circle)	Grab Comp. # subsamples	Grab Comp. # subsamples		Grab Comp. # subsamples
GPS Status (circle)	Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample	Collected Previously Collected Not Collected-no signal (3 att Not Collected-not required for		Collected Previously Collected Not Collected-no signal (3 attempts) Not Collected-not required for sample
GPS File (fill in or circle)	Filename: BNSF ROW NA	Filename:	_ NA	Filename: NA
Sample Time	0848			
Top Depth (inches below ground surface)	0			
Bottom Depth (inches below ground surface)	6"			
Field Comments	BB-AD-00518	BD		BD
Note if vermiculite is visible in sampled area	NONE			
Entered (LFO)	Volpe: Entered Validated	Volpe: Entered Validated		Volpe: Entered Validated
For F	ield Team Completion (Provide Initials)	Completed by 177	QC by:	DW



APPENDIX D

METEOROLOGICAL DATA

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-17-2008 23:04 MDT	53	36.3	53	0	1	13	OK	0	32.22	49
9-17-2008 22:04 MDT	57	38	49	0	1	14	OK	0	32.22	53
9-17-2008 21:04 MDT	62	38.6	42	0	1	35	OK	0	32.22	57
9-17-2008 20:04 MDT	68	40	36	0	1	268	OK	8	32.22	62
9-17-2008 19:04 MDT	76	43.2	31	0	1	278	OK	28	32.22	70
9-17-2008 18:04 MDT	82	38.2	21	0	3	192	OK	51	32.22	77
9-17-2008 17:04 MDT	86	32.9	15	1	4	214	OK	277	32.22	83
9-17-2008 16:04 MDT	90	37.7	16	1	5	171	OK	578	32.22	97
9-17-2008 15:04 MDT	87	38.3	18	1	4	255	OK	653	32.22	90
9-17-2008 14:04 MDT	82	38.2	21	1	4	158	OK	670	32.22	92
9-17-2008 13:04 MDT	74	38.8	28	1	5	90	OK	636	32.22	85
9-17-2008 12:04 MDT	64	37.9	38	1	4	99	OK	342	32.22	72
9-17-2008 11:04 MDT	54	37.7	54	1	3	103	OK	121	32.22	53
9-17-2008 10:04 MDT	47	38.1	71	1	3	189	OK	56	32.22	45
9-17-2008 9:04 MDT	40	37	89	0	1	196	OK	37	32.22	39
9-17-2008 8:04 MDT	36	34.7	95	0	0	0	OK	9	32.22	35
9-17-2008 7:04 MDT	36	34.2	93	0	0	0	OK	0	32.22	35
9-17-2008 6:04 MDT	38	35.3	90	0	0	0	OK	0	32.22	36
9-17-2008 5:04 MDT	39	35.2	86	0	1	294	OK	0	32.22	37
9-17-2008 4:04 MDT	41	36.5	84	0	0	0	OK	0	32.22	38
9-17-2008 3:04 MDT	42	36	79	0	0	0	OK	0	32.22	40
9-17-2008 2:04 MDT	44	36.3	74	0	0	0	OK	0	32.22	42
9-17-2008 1:04 MDT	47	37.7	70	0	0	0	OK	0	32.22	44
9-17-2008 0:04 MDT	49	37	63	0	1	8	OK	0	32.22	46
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nagem	ent & U	ISDA F	orest S	Service		
Contact MesoWest				_						

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-18-2008 23:04 MDT	58	40	51	0	0		OK	0	32.22	54
9-18-2008 22:04 MDT	61	40.6	47	0	0		OK	0	32.22	58
9-18-2008 21:04 MDT	64	40.4	42	0	0		OK	0	32.22	61
9-18-2008 20:04 MDT	69	41.6	37	0	1		OK	7	32.22	63
9-18-2008 19:04 MDT	77	44.9	32	0	1	290	OK	37	32.22	71
9-18-2008 18:04 MDT	82	40.5	23	0	1	273	OK	63	32.22	77
9-18-2008 17:04 MDT	87	35.4	16	1	4	167	OK	256	32.22	84
9-18-2008 16:04 MDT	90	37.7	16	2	3	192	OK	535	32.22	95
9-18-2008 15:04 MDT	88	37.7	17	1	3	226	OK	616	32.22	93
9-18-2008 14:04 MDT	82	39.4	22	1	4	137	OK	632	32.22	91
9-18-2008 13:04 MDT	76	38.6	26	1	4	255	OK	607	32.22	85
9-18-2008 12:04 MDT	67	36.9	33	1	4	136	OK	341	32.22	73
9-18-2008 10:04 MDT	47	37.4	69	0	2	112	OK	58	32.22	46
9-18-2008 9:04 MDT	40	36.2	86	0	1	267	OK	35	32.22	40
9-18-2008 8:04 MDT	37	34.9	92	0	0	0	OK	7	32.22	36
9-18-2008 7:04 MDT	38	35.3	90	0	0	0	OK	0	32.22	36
9-18-2008 6:04 MDT	39	35.5	87	0	0	0	OK	0	32.22	37
9-18-2008 5:04 MDT	41	36.2	83	0	0	0	OK	0	32.22	38
9-18-2008 4:04 MDT	42	36	79	0	0	0	OK	0	32.22	40
9-18-2008 3:04 MDT	44	36.6	75	0	1	284	OK	0	32.22	42
9-18-2008 2:04 MDT	46	38.2	74	0	0	0	OK	0	32.22	43
9-18-2008 1:04 MDT	48	37.2	66	0	1	1	OK	0	32.22	45
9-18-2008 0:04 MDT	51	38	61	0	1	310	OK	0	32.22	47
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	ınagem	ent & U	SDA F	orest S	ervice		
Contact MesoWest										

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-19-2008 23:04 MDT	56	38.1	51	0	1	67	OK	0	32.22	52
9-19-2008 22:04 MDT	59	39.9	49	0	1	66	OK	0	32.22	55
9-19-2008 21:04 MDT	63	41.3	45	0	1	41	OK	0	32.22	59
9-19-2008 20:04 MDT	68	41.4	38	0	1	64	OK	5	32.22	63
9-19-2008 19:04 MDT	75	42.3	31	0	0	0	OK	28	32.22	70
9-19-2008 18:04 MDT	81	42.9	26	0	3	218	OK	57	32.22	77
9-19-2008 17:04 MDT	88	39.2	18	1	4	191	OK	221	32.22	84
9-19-2008 16:04 MDT	92	40.9	17	1	4	217	OK	494	32.22	93
9-19-2008 15:04 MDT	88	39.2	18	1	3	155	OK	554	32.22	96
9-19-2008 14:04 MDT	83	41.4	23	1	4	168	OK	605	32.22	90
9-19-2008 13:04 MDT	76	43.2	31	1	3	171	OK	559	32.22	85
9-19-2008 12:04 MDT	67	41.2	39	1	3	121	OK	329	32.22	73
9-19-2008 11:04 MDT	57	41.9	57	1	3	207	OK	127	32.22	57
9-19-2008 10:04 MDT	50	40.6	70	0	1	130	OK	72	32.22	49
9-19-2008 9:04 MDT	43	39.7	88	0	0	0	OK	35	32.22	42
9-19-2008 8:04 MDT	40	37.9	92	0	0	0	OK	8	32.22	39
9-19-2008 7:04 MDT	41	38	89	0	0	0	OK	0	32.22	39
9-19-2008 6:04 MDT	43	38.8	85	0	0	0	OK	0	32.22	40
9-19-2008 5:04 MDT	44	38.9	82	0	1	327	OK	0	32.22	42
9-19-2008 4:04 MDT	46	39.5	78	0	1	301	OK	0	32.22	43
9-19-2008 3:04 MDT	47	39.1	74	0	2	6	OK	0	32.22	45
9-19-2008 2:04 MDT	49	39.6	70	0	0	0	OK	0	32.22	46
9-19-2008 1:04 MDT	52	40.2	64	0	1	311	OK	0	32.22	48
9-19-2008 0:04 MDT	54	39.6	58	0	1	320	OK	0	32.22	51
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nagem	ent & U	SDA F	orest S	Service		
Contact MesoWest				_						

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-22-2008 23:04 MDT	42	42	100	0	0	0	OK	0	32.65	42
9-22-2008 22:04 MDT	43	43	100	0	0	0	OK	0	32.65	42
9-22-2008 21:04 MDT	43	43	100	0	6	252	OK	0	32.65	42
9-22-2008 20:04 MDT	46	46	100	1	3	175	OK	5	32.64	45
9-22-2008 19:04 MDT	49	47.6	95	0	3	280	OK	48	32.64	47
9-22-2008 18:04 MDT	48	47.5	98	0	4	349	OK	59	32.64	48
9-22-2008 17:04 MDT	50	47.2	90	1	7	10	OK	39	32.64	48
9-22-2008 16:04 MDT	59	42.9	55	1	4	324		241	32.61	53
9-22-2008 15:04 MDT	58	45.5	63	1	4		OK	218	32.61	55
9-22-2008 14:04 MDT	55	46.5	73	2	4		OK	166	32.61	54
9-22-2008 13:04 MDT	60	48.6	66	2	5		OK	379	32.6	59
9-22-2008 12:04 MDT	55	53.9	96	1	4		OK	120	32.6	56
9-22-2008 11:04 MDT	53	53	100	0	2	188		106	32.6	54
9-22-2008 10:04 MDT	51	51	100	0	1	14	OK	83	32.6	53
9-22-2008 9:04 MDT	49	49	100	0	2	79	OK	22	32.6	50
9-22-2008 8:04 MDT	48	48	100	1	3	58	OK	1	32.59	49
9-22-2008 7:04 MDT	48	48	100	1	2	329	OK	0	32.54	48
9-22-2008 6:04 MDT	48	48	100	1	3	272	OK	0	32.54	48
9-22-2008 5:04 MDT	49	49	100	0	1	260	OK	0	32.54	49
9-22-2008 4:04 MDT	49	49	100	0	2	45	OK	0	32.54	49
9-22-2008 3:04 MDT	49	49	100	0	1	202	OK	0	32.54	49
9-22-2008 2:04 MDT	49	49	100	0	1	46	OK	0	32.54	49
9-22-2008 1:04 MDT	49	49	100	0	1	103		0	32.54	49
9-22-2008 0:04 MDT	49	49	100	0	0	0	OK	0	32.54	49
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nagem	ent & U	ISDA F	orest S	ervice		
Contact MesoWest										

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-23-2008 23:04 MDT	42	36.6	81	0	0	0	OK	0	32.65	40
9-23-2008 22:04 MDT	43	36.9	79	0	1	4	OK	0	32.65	42
9-23-2008 21:04 MDT	45	35.8	70	0	1	27	OK	0	32.65	44
9-23-2008 20:04 MDT	49	37.4	64	0	1	29	OK	4	32.65	46
9-23-2008 19:04 MDT	54	38.2	55	0	2	21	OK	35	32.65	51
9-23-2008 18:04 MDT	58	34.4	41	2	6	221	OK	62	32.65	56
9-23-2008 17:04 MDT	59	29.2	32	1	5	67	OK	268	32.65	57
9-23-2008 16:04 MDT	65	32	29	1	6	144		608	32.65	72
9-23-2008 15:04 MDT	65	35.9	34	1	4	183	OK	590	32.65	72
9-23-2008 14:04 MDT	62	34	35	1	5	275	OK	627	32.65	64
9-23-2008 13:04 MDT	61	34.5	37	1	4	193	OK	637	32.65	64
9-23-2008 12:04 MDT	54	45.9	74	1	3	141	OK	351	32.65	56
9-23-2008 11:04 MDT	46	43.5	91	1	3	181	OK	141	32.65	45
9-23-2008 10:04 MDT	43	42.2	97	0	3	134	OK	87	32.65	44
9-23-2008 9:04 MDT	41	41	100	1	3	78	OK	30	32.65	42
9-23-2008 8:04 MDT	41	41	100	0	2	159	OK	3	32.65	41
9-23-2008 7:04 MDT	41	41	100	1	4	64	OK	0	32.65	41
9-23-2008 6:04 MDT	41	41	100	0	3	88	OK	0	32.65	42
9-23-2008 5:04 MDT	40	40	100	0	1	84	OK	0	32.65	40
9-23-2008 4:04 MDT	41	41	100	0	0	0	OK	0	32.65	40
9-23-2008 3:04 MDT	42	42	100	0	0	0	OK	0	32.65	42
9-23-2008 2:04 MDT	42	42	100	0	0		OK	0	32.65	42
9-23-2008 1:04 MDT	43	43	100	0	0	0	OK	0	32.65	43
9-23-2008 0:04 MDT	43	43	100	0	0	0	OK	0	32.65	43
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nagem	ent & U	ISDA F	orest S	ervice		
Contact MesoWest										

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-24-2008 23:04 MDT	46	42.9	89	0	3	41	OK	0	32.65	45
9-24-2008 22:04 MDT	47	42.4	84	1	2	27	OK	0	32.65	45
9-24-2008 21:04 MDT	49	42.8	79	0	1	27	OK	0	32.65	47
9-24-2008 20:04 MDT	52	43.3	72	0	1	109	OK	4	32.65	50
9-24-2008 19:04 MDT	56	43.6	63	0	0	0	OK	39	32.65	54
9-24-2008 18:04 MDT	59	42.4	54	0	1	62	OK	92	32.65	58
9-24-2008 17:04 MDT	62	37.4	40	0	3	327	OK	224	32.65	61
9-24-2008 16:04 MDT	64	39.2	40	1	4	148	OK	449	32.65	69
9-24-2008 15:04 MDT	59	37.7	45	1	4	129	OK	498	32.65	67
9-24-2008 14:04 MDT	51	39.3	64	1	3	125	OK	197	32.65	55
9-24-2008 13:04 MDT	48	37.9	68	0	3	166	OK	203	32.65	51
9-24-2008 12:04 MDT	44	38.6	81	0	2	162	OK	158	32.65	46
9-24-2008 11:04 MDT	42	38.7	88	0	2	155	OK	122	32.65	43
9-24-2008 10:04 MDT	39	38	96	0	1	187	OK	79	32.65	40
9-24-2008 9:04 MDT	36	36	100	0	1	242	OK	37	32.65	37
9-24-2008 8:04 MDT	33	33	100	0	1	59	OK	6	32.65	32
9-24-2008 7:04 MDT	33	33	100	0	1	342	OK	0	32.65	32
9-24-2008 6:04 MDT	34	34	100	0	1	23	OK	0	32.65	34
9-24-2008 5:04 MDT	34	34	100	0	1	5	OK	0	32.65	33
9-24-2008 4:04 MDT	35	34.7	99	0	1	1	OK	0	32.65	33
9-24-2008 3:04 MDT	36	35.2	97	0	0	0	OK	0	32.65	35
9-24-2008 2:04 MDT	38	36.2	93	0	0	0	OK	0	32.65	37
9-24-2008 1:04 MDT	40	37	89	0	0	0	OK	0	32.65	39
9-24-2008 0:04 MDT	41	37.1	86	0	1	42	OK	0	32.65	40
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nageme	ent & U	SDA F	orest S	Service		
Contact MesoWest										

ID = LBBM8	TMPF °F	DWPF °F	RELH %	SKNT &nb	GUST &nb	DRCT	QFLG	SOLR &nb	PREC &nb	FT °F
9-25-2008 23:04 MDT	48	48	100	1	3		OK	0	32.72	47
9-25-2008 22:04 MDT	48	48	100	1	3	1	OK	0	32.72	47
9-25-2008 21:04 MDT	47	47	100	0	2	64	OK	0	32.72	46
9-25-2008 20:04 MDT	49	49	100	0	2	92	OK	3	32.72	47
9-25-2008 19:04 MDT	52	52	100	1	3	33	OK	32	32.72	51
9-25-2008 18:04 MDT	54	54	100	0	6	69	OK	58	32.72	54
9-25-2008 17:04 MDT	57	52.5	85	0	2	341	OK	87	32.65	56
9-25-2008 16:04 MDT	60	48.6	66	0	2	190	OK	127	32.65	61
9-25-2008 15:04 MDT	60	48.2	65	1	2	157	OK	163	32.65	62
9-25-2008 14:04 MDT	57	46.5	68	0	2	194	OK	152	32.65	59
9-25-2008 13:04 MDT	55	45.8	71	0	4	150	OK	175	32.65	56
9-25-2008 12:04 MDT	53	47	80	0	2	84	OK	163	32.65	54
9-25-2008 11:04 MDT	49	47.3	94	1	4	223	OK	75	32.65	49
9-25-2008 10:04 MDT	47	44.5	91	0	3	131	OK	77	32.65	48
9-25-2008 9:04 MDT	43	43	100	0	1	110	OK	27	32.65	43
9-25-2008 8:04 MDT	42	42	100	1	2	46	OK	4	32.65	
9-25-2008 7:04 MDT	43	43	100	0	2	358	OK	0	32.65	43
9-25-2008 6:04 MDT	42	42	100	0	1	215	OK	0	32.65	42
9-25-2008 5:04 MDT	43	43	100	1	4	79	OK	0	32.65	43
9-25-2008 4:04 MDT	42	42	100	0	2	11	OK	0	32.65	42
9-25-2008 3:04 MDT	43	42.7	99	1	3	280	OK	0	32.65	42
9-25-2008 2:04 MDT	45	43.9	96	1	2	41	OK	0	32.65	44
9-25-2008 0:04 MDT	47	45.1	93	1	3	222	OK	0	32.65	46
MesoWest Disclaimer										
Data provided b	y: Bure	eau of L	and Ma	nagem	ent & U	ISDA F	orest S	Service		
Contact MesoWest										

9-17-08I ogger

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Export Filename : C:\MICROMET\MIN1\EXPORT\08091717.TXT Export data for station : C A E
                                                                                                                                                                                                                               2008/09/25
 Printing Date
  , , WS, WD, AT, RH, GUST, CH6, BP, BV, RAIN
 , , (MPH) , (Deg) , (F) , (%) , (MPH) , (none) , (HG) , (VDC) , (i n) 2008/09/17, 00: 01, None, 
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Export Filename

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APPENDIX E

FIELD NOTES

LIBBY, MT & TROY, MT BASF RAIL MAINTENANCE ACTIVITY BASED SAMPLING (ABG FIELD COOK #1 START DATE 09-17-08 ALL-WEATHER **ENVIRONMENTAL** No. 550

Location MP 1312

Project / Client BNST-

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Project / Client BNSP

DAVE WELCH COLLECTS 3 FINGBRS HIGH FULL OF SOIL IN A ONE GALLON ZIPLOCE BAG FOR SAMPLING ANAWSIS MATT LENZ TAILES GPS LOCATION OF SAMPLE POINT (SP) 1 1048 RR- 00002 SOIL SAMPLE 2 IS TAKEN 8HEFT#0059ZZ SP- 138461 1048 MATT LENZ TAKES GPS LOCATION OF SP2 LOWAMOUNT OF VERMICUEITE (VISUA) 1049 FOUND IN SOIL 1057 SOIL SAMPLE #3 RR- 00003 15 TAKEN SHBBT \$005922 SP- 138462 LOW AMOUNT OF TA FOUND 1057 MOSTLY DISSEMINATED (057 MATT LENZ THEES GPS COCATION OF SP#3

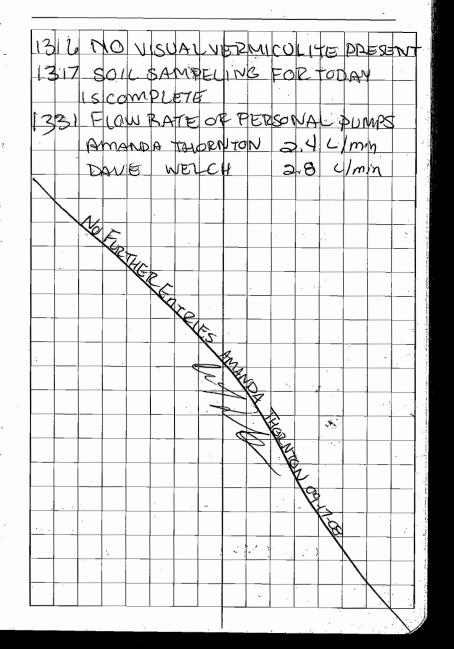
1105 SOIL SAMPLE RR- 00004 #415 TAKEN SHEET 4005923 SP- 138463 1105 LOW AMOUNT OF WERMICULTE POUND IN SOIL (MOSTLY NISSEMANATED) MATT LENZ TAKES EPS LOCATION MOS OF SP#4 SOIL SAMPLE 45 1113 RR- 00005 15 TAKEN SHEET 4005923 SP- 138464 113 LOW AMOUNT OF VERMICULY TECUSUAL FOUND IN SOIL (MOSTLY DESSIMANATED PLOT OF COALINTHE VICINITY 1413 MATTLENS TAKES GD SLOCATION OP SP #5 SOIC SAMPLE # 6 1122 RR- 00006 15 TAKEN SHEET # 005923 SP- 138465 NOANET MICOLITE FOUND IN SOLE 1172 VISUAL 1177 MATT LENZ TAKES GPS LOCATION OF SPHE

1138 SOIL SAMPLE 48 RR- 00008 IS TAKEN SHEET # 005924 SP- 138467 NO VISUAL VERMICULITE FOUND 1138 1138 MATT LENZ TAKES GPS LOCATION OF SP#8 1147 SOIL SAMPLE #9 RR- 00009 IS TAKEN SHEET \$ 005924 SP- 138468 147 LOW AMOUNT OF VISUAL UTIMICULITE ENCOUNTERED 1147 SP#9

SOLSAMPLE #10 IS TAKEN SHEET#OOS925 USG LOW AMOUNT OF VISUAL VERMICULITE ISTO MATT LENE TAILES GRS LOCATION OF SP #10 1204 SOIL SAMPLE RR-00011 # (115 TAKEN SHEET #005925 SP- 138470 1204 LOW AMOUNT DE VISUAL VERMICULITE ENCOUNTERED 1204 MATT LENZ TAKES GISLOCATION OF SP# SOIL SAMPLE #12 1214 RR-00012 IS TAKEN-8HEET #055925 SP- 138471 MATTLENZ TAKES GPS LOCATION OF 1214 LOW AMOUNT OF VISUAL VETENICULITE ENCOUNTERED 1214 MATTLENZ TAKES A GPS LOCATION

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Location MP 1331.5 Date 09-18-08 19
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1118 SOIL SAMPLE #18 RR-00018 (S TAIGEN SMEET 405927 SP- 138477 1120 ACTUAL TRESSPASSETAS ON SITE OLD MAN & LADY FISHING W-NOONS-08 2 SCHNOWSERS NO UV SEEN 1120 RR- 00019 SOIL SAMPLE # 19 15 TAKEN SP- 138478 SHEET#006/01 NO UN ENCOUNTERED 1142 NOTEL: 18 MIN TIME SPAN BETWEEN SAMPLES 18 & 19 WERE DUE TO HAVING TO RETRIEVE FIELD SUPPLIES FROM TRUCK 6 SPEAKING WITH TRUSSPASETES RR-00020 1152 SOIL SAMPLE 120 (STAKEN SP- 138479 SHEET#1006/01 1152 LOW ANOUNT OF VV SEEN DISSEMINATEDY

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1312 GPS POINT TAKEN OF SAMPLE #23.

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Project / Client	BNSP			

1313 GPS LOCATION TAKEN OF SOIL SAMPLE 422 1314 & PS LOCATION TAKEN OF SOIL SAMPLE #DI 1.315 GPS LOCATION TAKEN OF SOIL SAMPLE +DO 1316 GPS GOCATION TAKEN OF SOIL SAMPLE +19 675 LOCATION TAKEN OF SOIL SAMPLE 418 GPS LOCATION TAKENDESOIL SAMPLE #1 1318 6PS LONATION TAKEN OF SOIL SAMPLE #18 ALLOPS LOCATION WERE TAKEN BY MATT LENZ OF EMR BNSF TRAIN PASSED BY WORTH BOUND 1417 2 TRESPASSERS CROSS TRACKS TO GO #15HING FOR SAUMON 1600 DAREMISES

Location MP 1330.5 1331 Date 09-19-08

Project / Client BNST

Location MP 1330.5 [33] Date 09-19-08 23

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0935 SOIL SAMPLE 00025 GPS LOCATION

LACORTE.

Location MP 1330.8 133 | Date 09-19-08 25

0936 GPS TANENOG SAMPLE # 26 0937 GPS TAILENGE SAMPLE #27 GPS TAKEN OF SAMPLE #28 0940 GPS TAKEN OF SAMPLE \$29 0941 GPS TAKEN OF SAMPLE #30 1218 EMR BREASS DOWN EQUIPMENT 1240 EMP LEAVES WORK SITE CESTIMATED TIME

0715

Location MP 1329.8

Project / Client __BNSF

9/22/08

Date 09-22-08 27

Project / Client BNSF

DAVE WELCH ST AMANDA THORNOON APRIVE ON 0535 SITE CEMPTONESS) WEATHER 509 GRAINING, ALSO RAINED LAST NIGHT. 9 (108) O **6**00 ESS KOOTENAL BALLS & WSG Y COTENAL 0600 FAUS. 1010' FRIDAY 1120' 81400' TODAY 1120 WOOD 10 (V 153 1 1327 1400' CV 12392 13294 1200 TIME TRACEPROTECTION BUSE SPERTY MET PLNC 0000 MAIN LINE IS LUB AMTRAK WBST -BOUND. ALL PUMPS SET TO 28 //MN. N075 SAMPLE# START TIME NAME 55N' DOB RYAN TUCKER 3932 LABORDE 27 0621 MARKE-CKSTROM 4489 LABORER 0624 0626 COLREY CHIRISTIC 7073 LABORER 29 0629 JOSH SYNNOT | 8473 LARDEER BRYCE VANDENBOXE LADS MELLINE 0633 MIKE COSSAIRT 8354 MACHINE 0636 EMP & BUST LEAVE POR WORL AREA BUSE WILL MEET EMP AT MP 1329.8

0939 WEATHER STATION UP & BUNNING TEMP SUP WIND SPEED VARIBLE BETWEEN 7.8 MPH 8> 60 MPH BA . 00031 MATTUNZ 0941 0941 BA-dod 3 D AMANDA THORNTON 0947 DAVE WELCH BY DOHN STARR AREIN THE PROCESS OF BETTING UP PERIMETER 1009 DAY WEICH I ELT TO MAKE A PHONE TO CLAIR IFY BNSF DIRECTIONS DAVE WELCH RETURNS TO MP1324 1021 NOTE TROODMASTER WAS NOT CLEAR ON HE WHITEPOARD OR VERRALLY WHERE THEIR WORK ZONE HOULD RE TODAY. 1025 FMR BROLL DOWN GOURNENT & WENT TO MP 1829.8 1040 EMRARRIVAN AT MP13198 1043 WEATHER STATION UPERLYMING 1044 PERINETED PUMPSBETNG SETUP 1100 SOL SAMPLE ALOTS SET UP

Date 9-22-08 29 Location MP 1329. 8 Project / Client BNSF 1138 501L 15 VERY WET SOIL SAMPLIS 1143 RR- 00035 53\$18 TAYEUN SHEET # OOLLO SP- 138494 NO UN SEEN SOIL SAMPILE 1150 RR- 00036 36 ISTAKEN SHEET 4006/06 SP- 138495

1150 LOW AMOUNT OF DISCHMINATER

SOIL MOSTURE CONTENT BEING

SAMPLE # 37 1

SOILSAMPLE #39

SHEET #006107

15 TAKEN

00610

TAKEN

W SEEN

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SP- 138496

NO VV SEEN

NERYHIGH.

RR- 00038

SP- 138497

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BUITCHED OUT.

AMANDA THER ENTELES

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37

WIND SPEED a GMPH

Project / Client BNSF

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0920 DAVE WELCHE PLOTS OUT SOIL	
SAMPLING LOCATIONS.	
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COARSE GRAVEL. HARDPACKED	
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Location MP 1339.5

Project / Client BNST

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 Location MP 1339.5
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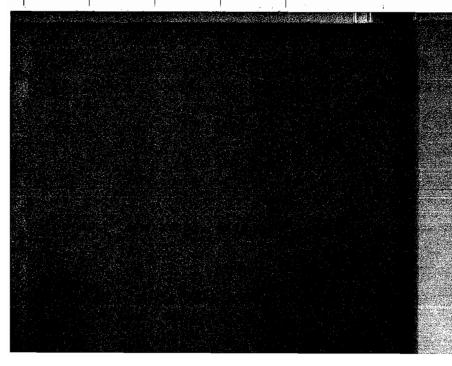
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EMPEMPIONES ALL ARTINEAT TROY YARD THE UP TO MEET RP.15 GANG BUSE SPRETY MUETING COMMENCES 1341 LEFT HIRSA 600 THEN RP95 WILL BE OUT OF OUG. IBNST SAFETY MEETING CONCUDES STRETCHING BEGINS SAMPLE SOB SAMPLE 55N* NAME JOSH SYNNOTY 8473 51 PYAN TUCKER 3932 LABORDA 52 machine MIKE COSSAIRT 8354 53 VICTOR BACHMER 2767 oper 54 RODNEY ZIMMERMU 3662 LABOTUR 55 9430 LAGEN COX ARCRER 56 EMP ARRIVES BY MP 1341 EMR SAFETY MEETING. LEVELD PPE 4 HOUR TRACKPROTECTION 0500-1000 WEATHER STATION UP& PUNNING. TOMP 49.8° 17 WINDSPEED O. GMPH PERIMETER PUMPS UBS RUNNING.

BINST CREW GUS ARRIVES 0730 0755 SOIL SAMPLE RR- 00056 56 ISTMEN SHEET HOOLOUS SP- 138515 0745 NO UN SEEN TEXTURE: SANDY SILT WEATHERD) ROCK (BALLAST 0803 SOIL SAMPLE #5715 TAKEN RR- 00057 SHEET # COILL SP- 138516 TEXTURE SAME AS AROW NO UV SEET 0803 SOIL SAMPLE 0812 RR- 00058 #58 ISTAKEN SHEET 4 0016115 SP- 138517 TEXTURE: SAME AS ABOUT 0812 NOW SERV 0822 SOILSAMPLE #59 RR- 00059 ISTAKEN SHEEK# 000116 SP- 138518



Location MP 134)	 Date 9-25-08	- 4 -
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Libby, MT & Troy, MT
BNSF Roil Maintenance
Activity Based Sampling
Fieldbook # 2 (ABJ)
Start Date
07-17-08

"Lite in the Rain" ALL-WEATHER ENVIRONMENTAL No. 550



ALL-WEATHER ENVIRONMENTAL FIELD BOOK

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This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page	Pattern	Cover	Options
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
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	CONTENTS	
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9	MP-1331	9/19/08
12	MP-1329.8	7/22/08
15	MP - 1337	9/23/08
18	MP-1339.5	9/24/08
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- 148 Sampling guidelines (Liquids)
- 149 Sampling guidelines (Solids)
- 150 Approximate Volume of Water in Casing or Hole, Ground Water Monitoring Well
- 151 PVC Pipe casing tables
- 152 Soil Classification
- 153 Soil Classification
- 54 Conversions (Length, Weight, Volume, Temp, etc...)
- 155 Conversions (Concentrations, Volume/Flow or Time, Velocity, Acceleration)
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CONTENTS

DATE PAGE REFERENCE

Project / Client BNSF-ROW

0000: Arrive at BNSF Salely Meetin 0630: Personal Pumps sharted for mo) activity based samples 2 05HA (six) 0700; EMR leaves safety needing sile to Ripley MP-1312. 0710: EMR holds talgate safety Bezin selling up Not enough power for souln's id 0735: Worth sice pumps started 0747: Tresposser ABS samples sharted 0830: Scott corney beares site to return generator M. lenc begins videstoping 0850 track maintenance cres 0910' Scott C back onsite withness gereator. 0915 Pumps on south side of track 1035 Cribber passed Auny 1144 Dumps chee

Location MP - 1312 Date 9/17/08 Location MP 1312 Date 9/17/08 Project / Client BNSF-ROW 1200% Pumps checked and rates are **BA-00008** 7-61pw 1315 Anchor nachre passes pungs 1250: Stationary pumps emples collected SP- 138442 ML/ BA- 00009 0737 start 143- 911/105 Tresposser sendes when 1.61pm ABS started 0636 2.81pm stopped 1436 2.81pm SP- 138443 BA- 00001 Blank BA- 00010 Stopped 1436 BA- 00002 0749 short 2.41 pm 16 BA- 00003 Start 0749 28 1pm BA- 00004 9/17/08 M1 BA- 00005 0753 short 2.8 1 pm ALMO BA- 00006 0911 start 7.6 1pm 1305 stop SP- 138440 1304 stop 7.61pm BA- 00007 SP- 138441

Location MP-1331,5

Date 9/18/08

Project / Client BNSF - ROW

BA- 00011 1502 stop 1.41pm BA- 00012 06418 Start 1.4 Lpm 1459 Step 10000 short BA- 00013 2.8 Lpm 1555 5 P , ract 2.8 1000 short Amainda stop 2.6 **BA-00014** 1555 36p storted 2.8 1015 start Hash stop 2.7 **BA-00015** 1556 slop Stationery 0958 Start 7.6 LAM **BA- 00016** 1550 stop 1 SP-138444 5958 short 7.6 LPM BA- 00017 1550 shop 5P-138445 short 1011 7.6 LPM **BA-00018** 1545 SP-138446 7.6LPM 1012 1544 slup BA- 00019 Blank **BA-00020**

0600 salely neeting at crossments 0630 short actuary based sample 0700: offsite 0730 Arrive at MD 13345 5 hould occur, solely weeky 0745: EMR prepares from BUST Track personnel to reach Samply area 0900: BUSE worker approach 0930: Pumps (stationary) stocked 0950: Tresposser pumps shorted 1015. Te pullers pass by 1030: speed swing a plate puller PASS 1100 5 star cheeks 5 Hattorary purps Flori Rates have not changed 1120: Tie plugger passes by 11301 Cribber passes by 1136 M. Cenz offsite to resolve GPS 155ue> 1219 Ray reset chare to the end of work aren 1st equipment to end Since Copper.

Project / Client BNSF ~ Row

1300 M. Cent rehim and takes GPS coordinates of soul sample areas and slahonary guins 1340 Reset come and welding truck stopped a have been for 30 minutes 1345 ABS pumps checked low Plani rabe Matts pump at 27 com Daves pump at 25 Lpm 1350: Train passes by 1400; ML GPS station 1540: Last of equipment passes 1545: Pull stationary samples 1556: Pull tresposser pumps emples Downloaded Met Data to haptop 1615 appite 1630

ML 1/19/68

Location MP-1330.5 1331 Date 9/19/08

Project / Client BWSF - ROW

CS45. Acre to BMF safety meeting 3648 shart BNST personal samples 0715 Train passes by 0120 stationary purps bet up and starter 0730 Trains have been passing on main work will begin shortly 0740 speed 34:45 UTSU! tran passes on Main OFER: The gullers pass 5810: worker withing rest OSIS EMP soil sampling surrocation Cono: EMR Unisetapes work 0839: M. Lenz checker spersonal prings Dove o setts still at 28 484 LEA J. starr checks stationary pungs 0835 Rate never of siding 28 40 work has stopped due to inoperable weeking Reset come noves morerable nauther 0850 Siding The plugger pusses soil sample 0940 Pull reset stark passes. could welding that phisos

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BA- 00026					, •				
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* BA- 00027	Bla	x	-						
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BA- 00028		48	2		-			(-3	^
SP- 138449									
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Location MP - 1331 7

Project / Client BNSF-Row

Amanda T. and Dave W. start sampling

Rail Reset chane passes by

Rain starts

soil. Run stopped

1120:

1130 :

1159:

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Date <u>912ス/08</u>

ML9/23/08

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Location MP-1339.5	Date 9124108
Project / Client BNSF	

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of concret	he ties visible dust.
1105. Gooper say	
1115: Weldy trul	
1120 Tunger pas	
	Dure Welch Pinished
Samplina s	
1 1 1 1 0 1	S GPS points at soil
	d ABS stationary samples
1155: The bomb	
	sol by workers
Machine De	allows and locks into
place	
1,245111111111	ment passes
1309: 3. Start == 0	bes do you've youd to take
1900 EMR ORSIL	000 000
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4.6	3 at 0619 2.8 Lpm
BA- 00048	Stop 1315
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₩ BA- 00050	-2 to 2 1400 -

			١
Project / Client	BNSF		

Project / Client _

0725 BA- 00067 7.6 2 pm 2000 5P-138463 co located sample **BA-00068** Start 0725 7.62pm 5P-138463 She p 1000 BNSF safely needing at Tray yard 0600 ABS samples sharted on BUSF workers 0620 Arme at MP-1341 shart Tresposees 0000 ABS samples. Set up weather station. safety reeding 0725 start stationary samples BA-00064 & BA-00068 are co-located samples 0730 EMR shorts soil sumply 0000 Chip supply passes to the west 0731 073 A 0738 Declipper passes 0745 speed swim pusses to east speed swin passes to west 0749 0757 Crew prepping tres 0805 Gooper passes 0824 fruk pasks

0848	Bomb,	5016	e>		
	spiker				
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1040	Personal 1	responser	Pump	للبود	d
1050	Fival de	arup	' '		
1059	EMR of	She			
L					

Project / Client Video Log

DiscTime 9117108 MP-1312 . Olson BNSF safety meeting 26 see Pumps (ABS) assigned to rail workers 43 see Air Moritoriu Area 1.00min spike puller 1.3 min crew working Disnin corbber Machine 3 min cribber passing 4.20 min Rail reset crane 6.36min Rail work 7.3 mm Line of machines 8.4 min Anchor machine 8.41 min Magnet pulling spikes for Scrap 9.3 min soil samples 9/18108 MP-1331.5 9.41 Ray reset cram Tresposer start samply 10.4 360 wew sampling Area

road work

1220

1250 1356 1404

Ballast being word Rail work

Trespossers (real) on tracks

Project/Client Under Log (cont.)

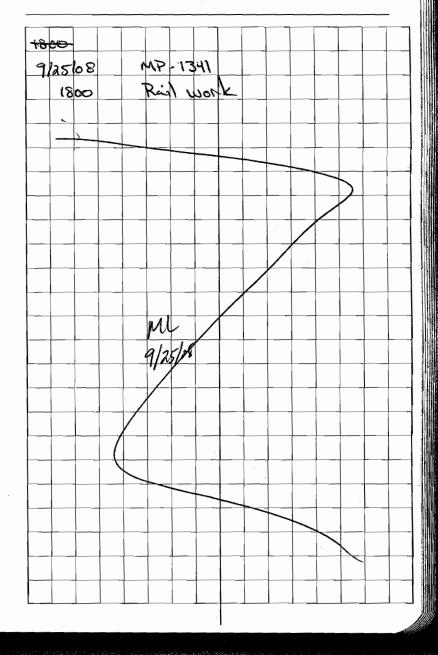
9/18/08 1331.5 welding Truck 0,5c1 1539 min Met Station 1801 - Train passing worker with 18.40 Spiker machine 9/19/08 MP-1331 Met Station Location 1915 360° view of sample Avec worker cutting rail 20.50 Rail Maintenance 21 19 MP. 1331 Olsee Soil samplers south side of rail Ar sampled Rail Reset crane Rail Maintenance Machine insperable (hydran); Im) Crane removing machine Ballast bein moved Grinding rail welding Truck

Project / Client ____ Violes Log

e Log

9/22/08 MP-1329.8 8.09 360° i.ev of samply Aver 9.10 Air sumples
9.30 Rul work 1000 Mile post location 9/23/08 MP- 1337 100) 360° of work Area 1030 spike puller 1130 (toopers applying adhesize 1140 Rail work 1200 The Bomb machine MP-1339.5 9 124/08 1230 Anchor pulled Dechyper 1300 360° of work area 1400 Goopers 1430 The bomb making 1450 workers putting dips on he 9/25/68 MP-1341 360° of work area 1500 1550 Declipper 1630 Rail work 1712 Soil samples 1730 rail reset chank 1740 The bolmb

Location	Date	
Project / Client		





APPENDIX F

FIELD CHANGE ORDERS

Field Change Order (FCO) #17-1
DATE: Wednesday, September 17, 2008
ADDRESS: BNSF ROW
PROJECT NAME: Libby Asbestos Project
DESCRIPTION OF CHANGE AND RATIONALE
The flow rates on ABS monitors could not reach 5 L/min (most could reach 2.8 L/min) – had to reassess using higher sensitivity (0.0024 cc-1), instead of original target sensitivity of 0.001 cc-1).
The reduced flow rates led to extending the sampling period from 2 and 4 hr/event to 6 and 8 hr/event.
SIGNATURE APPROVALS
EPA MANAGEMENT: DATE:
EMR MANAGEMENT: DATE: 9/11/08

Field Change Order (FCO) #17-2
DATE: Wednesday, September 17, 2008
ADDRESS: BNSF ROW
PROJECT NAME: Libby Asbestos Project
DESCRIPTION OF CHANGE AND RATIONALE
SAP describes ABS sampling for two onlooker trespassers, but during sampling, only one onlooker trespasser was sampled. However, this receptor was located near stationary samples, which should adequately characterize air concentrations near the maintenance activities.
SIGNATURE APPROVALS
EPA MANAGEMENT: DATE:
EMR MANAGEMENT: DATE: 9/17/08
·

DATE: Wednesday, September 17, 2008 ADDRESS: BNSF ROW PROJECT NAME: Libby Asbestos Project DESCRIPTION OF CHANGE AND RATIONALE The SAP was written assuming that all train activity on both tracks (main and siding) would be halted during maintenance activities. However, Day 1 maintenance activity occurred on a track siding and after several hours into the maintenance activities, the main track opened to passing trains.
The SAP was written assuming that all train activity on both tracks (main and siding) would be halted during maintenance activities. However, Day 1 maintenance activity occurred on a track siding and after several hours into the maintenance activities, the main track opened to
halted during maintenance activities. However, Day 1 maintenance activity occurred on a track siding and after several hours into the maintenance activities, the main track opened to
As a result, passing train activities were noted in the field logbook.
SIGNATURE APPROVALS
EPA MANAGEMENT: DATE:
EMR MANAGEMENT: DATE: 9/11/08

Field Change Order (FCO) #17- 4
DATE: Wednesday, September 17, 2008 ADDRESS: BNSF ROW
PROJECT NAME: Libby Asbestos Project
DESCRIPTION OF CHANGE AND RATIONALE
SAP describes ABS sampling for a pedestrian trespasser away from maintenance activities, but during sampling, the pedestrian trespassers walked in areas where maintenance work was not occuring, but also walked in areas where maintenance work was occurring. The nature of the track protection is that maintenance activities will occur for the entire length of track protection.
The resulting ABS samples for the pedestrian trespasser may be higher due to the presence of maintenance activities.
SIGNATURE APPROVALS
EPA MANAGEMENT: DATE:
EMR MANAGEMENT: STATE: 5/17/08

DATE: Wednesday, September 17, 2008 ADDRESS: BNSF ROW **PROJECT NAME:** Libby Asbestos Project DESCRIPTION OF CHANGE AND RATIONALE SAP describes equipment decontamination procedure for soil sampling procedure and Dave (soil sampler) mentioned that for grab samples that need to be discrete, wrapping soil sampling equipment (trowel) in aluminum foil (which was written for composite samples) after each grab sample collection seems redundant and time-consuming. Instead, the soil sampling equipment (trowel) is decontaminated using a two stage process consisting of Alconox solution and deionized water and dried after each sample. The soil sampling equipment (trowel) was stored in a clean zip-lock bag between each sample point. SIGNATURE APPROVALS EPA MANAGEMENT: EMR MANAGEMENT:

Field Change Order (FCO) #17- 5

Field Change Order (FCO) #17- 6	
DATE: Wednesday, September 17, 2008	
ADDRESS: BNSF ROW PROJECT NAME: Libby Asbestos Project	
FROJECT MAINE. LIDBY Aspestos Project	
DESCRIPTION OF CHANGE AND RATIONALE	
Event duration for the worker is variable (up to 10 hr days) and not controlled by sampling design team. Sample team can only control turning on pumps in the morning (approximately 6:30 am) and picking pumps up at the end of the working day (late afternoon) – had to reassess flow rate as setting ABS worker pumps to 2.8 L/min for roughly 10 hour sampling event (6:30 am to 4:30 pm) yielded filter loading.	
Reassessed flow rate for worker to avoid filter loading for next sampling event.	
CIONATURE ARREOVAL C	
SIGNATURE APPROVALS	
EPA MANAGEMENT: DATE:	
EMR MANAGEMENT: DATE: 4/17/08	

Field Change Order (FCO) #18-1		
DATE: Thursday, September 18, 2008		
ADDRESS: BNSF ROW		
PROJECT NAME: Libby Asbestos Project		
DESCRIPTION OF CHANGE AND RATIONALE		
Scheduled maintenance work area was shorter in length with less activities from Day 1. Therefore, number of soil samples decreas suit shortened maintenance length and exposed soil conditions.		
·		
•		
SIGNATURE APPROVALS		
EPA MANAGEMENT:	DATE:	
EMR MANAGEMENT:	DATE: 1/18/08	

Field Change Order (FCO) #18-2			
DATE: Thursday, September 18, 2008			
ADDRESS: BNSF ROW			
PROJECT NAME: Libby Asbestos Project			
DESCRIPTION OF CHANGE AND RATIONALE			
Reassessed flow rate for worker to avoid filter loading for sampling event due to previous day's filter loading. Set flow rate from 2.8 L/min to 1.0 L/min to see if loading would still be an issue.			
SIGNATURE APPROVALS			
EPA MANAGEMENT: DATE:			
EMR MANAGEMENT: DATE: 9/18/08			

Field Change Order (FCO) #18-3
DATE: Thursday, September 18, 2008
ADDRESS: BNSF ROW
PROJECT NAME: Libby Asbestos Project
DESCRIPTION OF CHANGE AND DATIONALE
DESCRIPTION OF CHANGE AND RATIONALE
Note that sampling on Day 1 occurred in a very dry dusty location, with resulting filter loading on worker ABS samples; whereas, Day 2 sampling location was also dry, but significantly less dusty (probably due to minimal exposed soil, and no dirt access road alongside trackage).
SIGNATURE APPROVALS
SIGNATURE AFPROVALS
EPA MANAGEMENT: DATE:
EMR MANAGEMENT: DATE: 9/18/08

Field Change Order (FCO) #19-1			
DATE: Friday, September 19, 2008			
ADDRESS: BNSF ROW			
PROJECT NAME: Libby Asbestos Project			
DESCRIPTION OF CHANGE AND RATIONALE			
DESCRIPTION OF CHANGE AND RATIONALE			
Scheduled maintenance work was less than 1,000 feet in length. sampling period limited compared to Day 1 and Day 2 sampling. It suit shortened maintenance length and duration.			
SIGNATURE APPROVALS			
OIGHATONE AFFROVALO			
EPA MANAGEMENT:	DATE:		
EMR MANAGEMENT:	DATE: <u>9/11/08</u>		

Field Change Order (FCO) #22-1		
DATE: Monday, September 22, 2008		
ADDRESS: BNSF ROW		
PROJECT NAME: Libby Asbestos Project		
DESCRIPTION OF CHANGE AND RATIONALE		
The SAP called for ABS sampling only during dry conditions, since it was based on EPA guidance. Sampling on this day event included light to heavy rain and was completed. Soil sampling, ABS and stationary air sampling was completed in otherwise normal fashion.		
SIGNATURE APPROVALS		
SIGNATURE AFFROVALS		
EPA MANAGEMENT: DATE:		
EMR MANAGEMENT: DATE: 9/22/08		



APPENDIX G

AIR SAMPLE LABORATORY REPORTS

INTERNAL CHAIN OF CUSTODY

10/21/2008 10:55:51 AM

Order ID: 270801091

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order: EMSL Proj ID:

Customer ID

Received:

Customer PO:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Test: TEM ISO	10312 <u>M</u>	atrix Air	TAT:	120 Hour	Qty	<u>:</u> 14
Acct Sts:	Sisprsn:	epodell	Logged:	rmahoney	Date:	10/21/2008
Inter- Lab Sample T	ransfe <u>r</u>		Sample Condition:	AcceptableUnacceptable		
Samples Relind	quished:	Date	Comments			
Samples Recei	ved:	Date				
Package Mailed	d to Westmont:	Date	1	CARLES NOOM OF A CARLES OF WHAT I HAVE BEEN A TO A SHOPPING TO A CARLES OF A C		an anna an ann an ann an an an an an an
Method of Deli	very:		Initial Prep	(Initials/Lab): K/C) .	Date: 10 21 08
Includes: (Circ	le)	Official and the second	Filter Prep (Initials/Lab):		Date:
Benchsheets Micrographs	Sample Slides GridBox	Sample filters Other	Grid Prep (I	nitials/Lab): KB		Date: 10/22/08
Final Package Re	ceived:	Date:	QC Selection Date Packa	on: ige Review: KU	Marie	Date: 2/26/0
			Date Packa	ي :oe Malled	The second in the second secon	Date: 3/2/09

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	• 270801091-0001	`BA-00003		10/26/2008 9:57:00 AM
270801091	270801091-0002	\BA-00004		10/26/2008 9:57:00 AM
270801091	270801091-0003	BA-00013		10/26/2008 9:57:00 AM
270801091	270801091-0004	NBA-00014		10/26/2008 9:57:00 AM
270801091	270801091-0005	~BA-00023	8	10/26/2008 9:57:00 AM
270801091	270801091-0006	~BA-00024		10/26/2008 9:57:00 AM
270801091	270801091-0007	► BA-00032		10/26/2008 9:57:00 AM
270801091	270801091-0008	BA-00033 √ A		10/26/2008 9:57:00 AM
	•	,	0 0 LO	

EMSL Analytical, Inc., 107 West 4th Street, Libby, MT 59923

Page 1 of 2

INTERNAL CHAIN OF CUSTODY

10/21/2008 10:55:51 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order: EMSL Proj ID: Cust COC ID

Customer ID

Received:

Customer PO:

EMRI78

10/21/08 9:57 AM

270801091

BNSF Libby, MT 2008

270801091	270801091-0009 ~BA-00040 以	10/26/2008 9:57:00 AM
270801091	270801091-0010 > BA-00041	10/26/2008 9:57:00 AM
270801091	270801091-0011 \ BA-00050	10/26/2008 9:57:00 AM
270801091	270801091-0012 \ BA-00051	10/26/2008 9:57:00 AM
270801091	270801091-0013 \ BA-00061	10/26/2008 9:57:00 AM
270801091	270801091-0014 BA-00062	10/26/2008 9:57:00 AM

10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

EMRI78

10/21/08 9:57 AM

EMSL Order:

270801091

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Test: TEM ISC	10312	<u>Matrix:</u> Air		<u>TAT:</u> 120 Hour	<u>Qty:</u> 14
Order ID	Lab Sample #	Cust. Sample #	Location		Due Date
270801091	270801091-0001	BA-00003			10/26/2008 9:57:00 AM

Comments:

ANALYZED:	DAN	Date:	11/12/08
Preliminary Data Sent to Special Projects:	RKIN	Date:	11/13/08
Osta Entry:	_0_	Data:	1408
Structure Review:	100	Date:	
Data Valildation:	KL	Date:	१३)३/०८
Reported to Olient:	KL	Date:	१२। अं०४

Micrograph Number	Type Diffraction or Morphology

10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Received:

EMSL Order:

Customer ID:

Customer PO:

EMSL Proj ID:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0002	BA-00004		10/26/2008 9:57:00
				AM

Comments:		

ANALYZED:	RAPY	Date:	11/12/08
Preliminary Data Sent to Special Projects:	Kica	Date:	11/13/08
Osia Entry:	Or.	Date:	11/13/08 11/108
Structure Review:		Date:	
Data Validation:	K.r.	Oste:	12/2/08
Reported to Client:	KL	Date:	12/3/08

Micrograph Number	Type Diffraction or Monstrology

10/21/2008 11:01:53 AM

Order ID: 270801091

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

10/21/08 9:57 AM

EMRI78

EMSL Order:

270801091

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0003	BA-00013		10/26/2008 9:57:00 AM

Comments:

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Preliminary Data Sent to Special Projects:	Rica	Date:	(1/13/05
Dala Entry:	ىد	Date:	11/14/08
Structure Review:		Date:	
Data Validation:	Y-L	Oatet	12/2/08
Reported to Client:	X-L	Date:	12/3/08

,	Micrograph Number	Type Diffraction or Monthology

10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

L14656

Duluth, MN 55802

(218) 625-2337

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0004	BA-00014		10/26/2008 9:57:00 AM

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Preliminary Data Sent to Special Projects:	RKM	Date:	11/13/08
Osta Entry:	e	Date:	गोपी०८
Structure Review:		Date:	t
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Reported to Client:	KL	Date:	13/08

Micrograph Number	Type Diffraction or Morphology
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10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656 Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

Customer ID:

Customer PO:

Received:

10/21/08 9:57 AM

270801091

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID**

EMSL Order:

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270801091	270801091-0005	BA-00023		10/26/2008 9:57:00 AM

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Reported to Client:	KL	Date:	12/3/08

Micrograph Number	Type Diffraction or Morphology

10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

L14656

(218) 625-2337

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Proj ID:

Customer ID:

Customer PO:

Received:

EMSL Order: 270801091

BNSF Libby, MT 2008

10/21/08 9:57 AM

EMRI78

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0006	BA-00024		10/26/2008 9:57:00 AM

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Preliminary Data Sent to Special Projects:	RKM	Date:	11/15/08
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Reported to Ollent:	KL	Date:	12/3/08

Micrograph Number	Type Diffraction or Monthology

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Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

10/21/08 9:57 AM

EMSL Order:

Cust COC ID

270801091

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0007	BA-00032	10000	10/26/2008 9:57:00 AM

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Structure Review:		Date:	· · ·
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Reported to Client:	KL	Date:	12/3/08

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Micrograph Number	Type Diffraction or Monthology

10/21/2008 11:01:53 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

L14656

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0008	BA-00033		10/26/2008 9:57:00 AM

Comments:

ANALYZED:	RMY	Date:	11/12/08
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/13/08
Data Entry:	<u> </u>	Date:	Willot
Structure Review:		Date:	
Datz Validation:	KL	Date:	12/2/08
Reported to Client:	γ. L	Date:	12/3/08

Micrograph Number	Type Diffraction or Monthology

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656

Phone: (218) 625-2332

EMSL Proj ID: Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Cust COC ID

EMSL Order:

Customer ID:

Customer PO:

Received:

EMRI78

10/21/08 9:57 AM

270801091

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0009	BA-00040		10/26/2008 9:57:00 AM

Comments:	

ANALYZED:	RHOV	Date:	11/13/08
Preliminary Data Sent to Special Projects:	RKM	Date:	11/15/08
Dala Entry:	سىق	Date:	u) 1408
Structure Review:		Date:	l t
Data Vallidation:	KL	Date:	12/2/08
Reported to Ollent:	KL	Date:	12/3/08

Micrograph Number	Type Diffraction or Monthology

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

Phone: (218) 625-2332

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

EMRI78

10/21/08 9:57 AM

EMSL Order:

EMSL Proj ID:

270801091 BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0010	BA-00041		10/26/2008 9:57:00 AM

Com	ment	s:

ANALYZED:	RHPY	Date:	11/13/08
Preliminary Data Sent to Special Projects:	RKM	Date:	11/13/08
Data Entry:	Qı	Date:	191908
Structure Review:		Date:	l
Deta Validation:	KL	Date:	12/2/08
Reported to Client:	KL	Date:	12/3/08

Micrograph Number	Type Diffraction or Monatology

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

L14656

Duluth, MN 55802

Fax: Project:

(218) 625-2337

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order:

Received:

EMSL Proj ID:

Customer ID:

Customer PO:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0011	BA-00050		10/26/2008 9:57:00 AM

:	

ANALYZED:	RNDY	Date:	4/13/08
Preliminary Data Sent to Special Projects:	RKM	Date:	11/13/08
Data Entry:	.0	Date:	4)14/08
Structure Review:		Date:	T t
Data Validation:	KL	Onte:	12/2/08
Reported to Ollent:	X.L	Date:	12/3/08

Micrograph Number	Type Diffraction or Monthology
	·

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0012	BA-00051		10/26/2008 9:57:00 AM

ANALYZED:	PUP	Date:	11/13/08
Preliminary Data Sent to Special Projects:	Rkin	Date:	11/13/08
Data Entry:	O.	Date:	11/14/08
Simioture Keview;		Date:	7 -4
Data Validation:	KL	Osie:	12/2/08
Reported to Olient:	Kr	Date:	12/3/08

Micrograph Number	Type Diffraction or Monatology

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

L14656

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

10/21/08 9:57 AM

EMSL Order:

EMSL Proj ID: BNSF Libby, MT 2008

270801091

EMRI78

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0013	BA-00061		10/26/2008 9:57:00 AM

Comments:		

ANALYZED:	RARY	Date:	11(13/08
Preliminary Data Sent to Special Projects:	R km	Date:	11/13/08
Deta Entry:	a	Date:	Willo 8
Structure Review:		Date:	l't
Data Vallidation:	KL	Date:	12/2/08
Reported to Client:	KL	Oate:	12/3/08

Micrograph Number	Type Diffraction or Monthology

10/21/2008 11:01:54 AM

Order ID: 270801091

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14656

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID: Cust COC ID

270801091

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801091	270801091-0014	BA-00062		10/26/2008 9:57:00

i	Comments:		
l	Connents.		
I			
١			
į			

ANALYZED:	perfox	Date:	11/13/08
Preliminary Data Sent to Special Projects:	Rku	Date:	11/13/08
Dala Entry:	le	Date:	41408
Structure Review:		Date:	
Data Validation:	KL	Date:	12/2/08
Reported to Client:	FL	Date:	12/3/0 S

Micrograph Number	Type Diffraction or Montrology
	- Million - Mill

Versi

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Status

QA Type

Analyzed BA-00003

Not QA 270801091-0001 Lab Sample Number

Air

Field

Direct

10312

Sample Type Category Prep Counting Rules **PARAMETERS**

Effective filter area 385.0 mm2 1.00E+00 Indirect factor Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 0.0130 mm2 Grid opening area

Volume (L) or Area (cm2) 933 L Sensitivity (amphibole) 8.14E-04 s/cc 8.14E-04 s/cc Sensitivity (chrysotile)

Recording Rules:

Min. AR Min width (um) Min length (um) ≥ 3:1 0.5 none

Stopping Rules:

Max GOs Max N Target S 0.0024 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	О		
f	0	0	О		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total OK 0

CONCENTRATION (s/cc)

CONCERNICAL	1014 (3/00)				
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	a			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	c		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
-	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00003_270801091-0001_ISO_11-12-08_D.xls

12/2/2008, 2:38 PM

FILE NAME: |BA-00003_270801091-0001_ISO_11-12-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX ((49)		
Voltage (KV)	100 K	٧	
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed 🔻		

EPA Sample Number:	BA-00003		
Sample Type	Air	-	
Air volume (L), oust sample area (cm2), or dustfall container area (cm2)	933		
Date received by lab	10/21/2	800	
Lab Job Number:	o Job Number: 270801		
Lab Sample Number:	27080109	1-0001	
Number of grids prepared	. 5		
Prepared by	К. Вап	nes	
Preparation date	10/22/2	800	
EPA COC Number	L1465	56	

Analyzed by	R. Pescador			
Analysis date	11/12/2008	11/12/2008		
Prep	Direct	~		
l sample type – air, is there loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-97, R			
Archive filter(s) storage location	Westmont			
in A he representation in the 1892 Chronical Carlo Accounts to 1892	ic it is newly is			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

≥ 3:1 Minimum Aspect Ratio 0,50 Minimum Length (um) none Minimum Width (um)

Target Sensitivity 0.0024 GOs required to reach 14 target sensitivity Maximum # of GOs 50 Maximum # of Structure 14 Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: BA-00003 LAB SAMPLE ID: 270801091-0001 Sample Type Count Rule Air 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

30 (A) C (A)	NACO PARTE CONTRACTOR OF PROPERTY OF THE PROPERTY OF THE	The Aller of the Control of the Cont	アスティアン のの がめい ここ 一年日
TAKAAL CAMARING	v Reached-Complete	ATTEMPANT COL	than atan
Taluel Sensuivii	v Reached-Comme	CHIERRY CALL	

	Grid	Structure	,	tructures	Dimens				Mineral C	lass (b)			1 = ve	s, blank	= n o	Fract. GO
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	and the second					维热: 54.	1.000	2/3/201	1	A STATE OF THE STA	Litter	:00th	201412	100
1	J4	ND	4 5 6 6		4 10.4	Mark.	ermine richt.	10.00	30 × 145 ×	200.	17 Me 17 18		S. 1000			10000
1	J6	ND						11,000		多之多	1.5			400		100
1	J8	ND		A STATE		Sydratic	48772	200	100	A SECTION	44.47	- Fr. 3.35		4		101
1	J10	ND	100	200				" "	-2	100				72.5		
11	l1	ND						#E 10	1 (A) 10 (B) 11 (B)		44.0					
1	. 13	ND	* 54/67			THE PARTY	April 5 N		11.77		1 1 1		4-200-500	6 191.30	3.045	104,000
1	15	ND					flowing the state of		100	1462	1. 花花树		1000	e a con	4	
1	17	ND	CONTRACTOR	200				\$84 P.	19.00				245.03			44.5
11	19	ND	100	10 Table 10	- 120 PM	* * * * * * * * * * * * * * * * * * *	Angel Comment		100		100		Hall grown	7	* 110	
11	H2	ND	en de la	\$200 ALC:	15-15-62	24,440	30 C 11 S.	Marien	29000	+3,58	(18) (19) (F)			10		1,000,000
11	H4	ND	1000				76	40.0	2.2		5.4.2		100	6.04		7,27,39
1	H6	ND	200	est de la constant		95 A.F.		17.55.26			100	300	10 14	4 2 2	90 A 100	2.00
1	H8	- ND	10.00	1424	0.564		1942,004-2-15-7-1	10.04	17.00		Name of	The state of the s				1000
1	H10	ND	- 100	(C) (1885)		- 1		90 to 100		400	(4 × × × 4 ×		100000	500.00	可有对学员	\$57 prof.
11	G1	ND	1200000					4.0	7.0		44.5		100			
1	G3	ND					Control of the Contro	100			200		45.0		and the second	
1	G5	ND				4444	Real feet		1.00	100			7 (F 18 18 18 18 18 18 18 18 18 18 18 18 18			
1	G7	ND			The State of the S		3	100 miles (100 miles (Ship Sale	46-4		1000		
1	G9	ND ND	September 1995					2 10 10 10 10 10 10 10 10 10 10 10 10 10		Jan Appelli			7.00		e de la company	100
1	F2 F4	ND ND						200	30.00	10 (10 to 10					7.99	
1	F6	ND ND	PRODUCTION OF THE PARTY OF THE	Section 1			1660	100					Sept. 1985	ices and	32 7 27	
1	F8	ND	200					14.00 M		400				36.95		
1	F10	ND ND	104/46/2005			The second		100000		The American	ELL S				SK 200	
2	J2	ND	120	- Y- (V) (V)	- 4		and the second		100	100					77.7	
2	J4	ND	Vagette state	Service Service		Seguite 12		Signal Control	3000	ALC: N						
2	J6	ND		1500000				y 4 - 4	1000	M. Carlo			200			
2	J8	ND			10.0	Albert 1	SEC.	1276.7	-1000	e e e	440.	7.000	2.6	10:171	100 TO 10	
2	J10	ND	Wastie		17.8		(A)V (4) (4)		34.6	No.	e de la composición dela composición de la composición de la composición de la composición dela composición dela composición dela composición de la composición de la composición de la composición dela co	1.00	Sec.	A STATE		
2	11	ND	Colored Co.	Mark Services			OF STATE	100000	2014 Sept.		ARCHIO.	1000	100		and latery	11.0
2	13	ND	7 (T. 17)	Old Section	0.00		ALCOHOLD ST.	450.000	1-210	SWEET	13.53		12002501	Application in	alle generally	24-0-520-55
2	15	ND			199		4.6	1	3.00	No.	144.69			12.00	ggerer.	
2	17	ND				194 (1944)	ALCO C	10.00	275	Address.	STATE OF		1000	777		1000
2	19	ND	DESCRIPTION.	*****				100	(2)	***		444	1-12-16		7.00	

2	H2	ND	
2	H4	ND	
2	H6	ND	
2	H8	ND	

Versio.

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00004

Not QA 270801091-0002

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

7.66E-04 s/cc
7.66E-04 s/cc

Recording Rules:

 Min. AR
 Min length (um)
 Min width (um)

 ≥ 3:1
 0.5
 none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

,					
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK	•	

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00004 270801091-0002 ISO 11-12-08 D.xls

12/2/2008, 2:43 PM

SA

FILE NAME: BA-00004 270801091-0002 ISO 11-12-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed		

EPA Sample Number:	BA-00004		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	991		
Date received by lab	10/21/2	800	
Lab Job Number:	270801091		
Lab Sample Number:	270801091-0002		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/22/2008		
EPA COC Number	L1465	6	

Analyzed by	R. Pescador			
Analysis date	11/12/2008	В		
Prep	Direct	~		
ir sample type – air, is there loose material or debris in the cowl?	No	~		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-97, S			
Archive filter(s) storage location	Westmont			
Ban de coma de como de 200. Soloneis, de la coma de 200.	GPSTMT16			
F- factor	1			
QA Type	Not QA	~		

Recording Rules:

Stopping Rules:

13COO! GII	1 Tutco.	Otopping Itales.				
≥ 3:1	Minimum Aspect Ratio	0.0024	Target Sensitivity			
0.50	Minimum Length (um)	13	GOs required to reach target sensitivity			
none	Minimum Width (um)		Maximum # of GOs			
		50	Maximum # of Structure			
F-factor C	alculation:	13	Estimated # of GOs			

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

V.

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: BA-00004 LAB SAMPLE ID: 270801091-0002

Sample Type Air Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008

QA by: K. Lusher QA date: 12/2/2008

	Grid	Structure		current GC tructures		ions (a)]	Mineral C	lass (b)			1 = V6	s, blank	= no	Fract. GO
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND			e grande i de g		1657 C 107570		Section 1	100			/ L 77564	100		
1	J3	ND		8000			dies	100		455	Ziret :		CLIP TO A	4000	4000	
1	J5	ND	ACCULATION OF	i de aleman	Oktivitati		a francisco	46.00	4.25		1256	THE THE STATE OF THE STATE		100		20.150-41.
1	J7	ND						Zeratin.		2, 4	10 A.			100	89 VV	
1	78	ND	7.0	April 19		0.00	5, T. S. S. S. S.			100	10.00	Target St. St. St. St. St.				final coll
1	12	ND			12.48°35°	A 25.00	1507300		1200		1.5	Alle Carried Land		7.56	Market .	有 能力。
1	14	ND	-4		10 T		35 (6) 3	等 图 14	34 P	1.4	10.51	OF GUITE		-5 TAB		6.83
1	16	ND		State of the	A Company		1000	*		A 76	1000	25 66	A Section			
1	18	ND							200			2.7				350
1	i 10	ND		Ab at	60 特别		In a set your				SP 55					4 4 4 4
1	H1	ND				# 1 P		40	11 2 19	10-20	173.00		1.0	* 50		经建筑
1	H3	ND		10 a 10 a	6	14.20	Electrical Control				75.					
1	H5	ND	7.45	一一一	1400 877	. 100 E 100	學物质疾病		報告的	2.6 FM					200.5	day and a great and a second
1	H7	ND	427				128 E.A. 15		T	196	1962					452
1	H9	ND	19.00	A 4 (A 18 A 48 A	A 426	10.57	- Plateur, a		to catally	1000	34,024		1,000	45.35		i e sant
1	G2	ND	4-4-5		建设产业 。	136				4436	14.77			4000		
1	G4	ND		18					33.00	X 25-50	1000		* . T			
1	G6	ND	Page Page	12.		38.5.9.9.	100			250 P.	7.23	AND TO		100		*17.5
11	G8	ND	2000			100	200	Sec. 1	经决策	计数据:	10.005					The state of the second
1	G10	ND	9-22-96-70	A Comment		35,35	100000		ENTAGES.	75.68	22.0			40.00		200
1	D2	ND	7. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	V. 100		100	1,047,000	Sec.	100.00	10.00	1,000				4,500	4,24,4
1	D4	ND	1.767	14 (15 m)		100		35 3 3	154.544		1000					
1	D6	ND	STREET,			美国教	Contract of the		F. 67.1	78 SE	- 1 To 1 To 1		3 10 10	17, 22,7		* 23 7 7
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1	D10	ND		and the	20.00				7.7	4 4 6	200		200	2 3		
2	12	ND	Or of the same			A CONTRACTOR OF THE PARTY OF TH			. 10 100		196	184 P	46439	-100		2011
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2	16	ND	1495	34.	A Company	100	17.00		5.414	146.00	Foreign			56.5		
2	18	ND					P.C.			75,40	1000					Officer Street
2	[10	ND			2004	35.4									72.00	45-15 - 15 S.
2	G2	ND				200		70.00	-25	100	3235		-	100		
2	G4	ND		26.00			Sec. 1	100		324	75.5			100	resident reserv	\$2.10 S. Nov.
2	G6	ND				100		76. 3. 3.	0.77	200				10000		
2	G8	ND		Angling B	7. AA	- 20.76	200 c/5	1980 C. T.	516-1446	200 a 1	44.50		ones various	14.4	ed Posts	
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2	E2	ND	
2	E4	ND	
2	E6	ND	
2	E8	ND	

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SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00013

Not QA 270801091-0003

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

Numb

Air Field Direct **PARAMETERS**

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 977 L
Sensitivity (amphibole) 7.77E-04 s/cc
Sensitivity (chrysotile) 7.77E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0	j	
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		***************************************

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00013 270801091-0003 ISO 11-12-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27	
Instrument	JEOL 100 CX (I (49)	
Voltage (KV)	100 kV	
Magnification	19,000 X	
Grid opening area (mm2)	0.0130	
Scale: 1L =	1.000	
Scale: 1D =	1.000	
Primary filter area (mm2)	385.0	
Secondary Filter Area (mm2)		
Category	Field	
Filter Status	Analyzed 🔻	

EPA Sample Number:	BA-000	113
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	977	
Date received by lab	10/21/2	800
Lab Job Number:	270801	091
Lab Sample Number:	27080109 ⁻	1-0003
Number of grids prepared	5	
Prepared by	K. Barr	ies
Preparation date	10/22/2	800
EPA COC Number	L1465	66

Analyzed by	R. Pescad	or
Analysis date	11/12/200	8
Prep	Direct	•
ir sample type – air, is there loose material or debris in the cowl?	No	•
Counting rules	ISO (Air or Dust)	•
Grid storage location	2708-EMR-9	7, T
Archive filter(s) storage location	Westmon	ıt
Branda green to be the Selection of the	holise te je i j	
F- factor	1	
QA Type	Not QA	•

Recording Rules:

Stopping Rules:

110001	univ	(Nules.	Stopping I	tules.
≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)	13	GOs required to reach target sensitivity
nor	ne .	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
			13	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

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EPA SAMPLE ID: BA-00013

LAB SAMPLE ID: 270801091-0003

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

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larget S				current GC			विकार करिए करिए के स्टूर्ज के कि	1				Y	,			
Grid	Grid	Structure		tructures	Dimens		Identification		Mineral C	lass (b)				s, blank =		Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
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1	15	ND				6	100	rate a	456					25.22	(1) (H)	
1	17	ND	14.7%						# 2				Table 1	100		
1	19	ND	9, 2, 99		2.00	\$ 4 (; ; ; <u>)</u>	1.5	100			44.30		100 HARRY	3/9/42	the state of	
1	G2	ND	1441	1-47	**************************************			3.73	*		3246-1		(F) (\$7.5%)	411	124 (424)	
1	G4	ND	2 4-5%						3000		100			A. A. S. A.		
1	G6	ND	12 11 17 18		162%			2000	P. William					-13.53		
1	G 8	ND	100			3. Sec. 3.	15,000		State of the state				100 100	沙沙湖	Babba	
1	G10	ND				¥350.00	100		165		19 (44.8)		175.074	, j		
1	F1	ND	11.00		0.00		200	Section .	W 4.41	Malay day	100 Feb.		Salar Salar		12 (3.94)	
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1	F5	ND	17-14-160	1000			100	100	100	Series.	11.			D. G. etc.	20.35	60 T. V
1	F7	ND	St. Constant	400	369	Section 1	130.99		6.55		4.670			100		
1	F9	ND	- 2.00					4.30%	3.00		10.00		100	44.0		Activities.
1	E2	ND				2007		# A	144				3 % 3	1.00	e Decidence	
1	E4	ND	10000	1000011348	100		14,000		9.6	100						61.56
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2	11	ND						24.7								
2	13	ND			*12.0		100	-100	100	* Na * N	9		Short a			
2	15	ND		T GAT THE	Assessment of the second	Charles Co.						Page 1				
2	17	ND		30												44
2	19	ND		10.00					70.0		2 2 3 4 3		e G Program	1711		
2	H2	ND			45.0		American Company			1405	5118		20 mg/m	716.6	114.72	
2	H4	ND					1004		A	2 200	200	The second secon	Mary No.	10000		847777
2	H6	ND	7. SANS			OR S			10000		100			1956		
2	H8	ND	100		#24 A	WPW.				20000	177		69 (FE) (SEE)	300	45 34	
2	H10	ND						4.6	0.000	2 012	- 1		2			

2	G5		
2	G7	ND	

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Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

QA Type

Analyzed EPA Sample Number BA-00014 Not QA

Sample Type Category Prep Counting Rules

Lab Sample Number

Direct 10312

Air

Field

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 942 L 8.06E-04 s/cc Sensitivity (amphibole) Sensitivity (chrysotile) 8.06E-04 s/cc

Recording Rules:

Min width (um) Min. AR Min length (um) ≥ 3:1 0.5 none

270801091-0004

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
e	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK	······································	

OK OK Check Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00014 270801091-0004 ISO 11-12-08 D.xls

12/2/2008, 2:52 PM

FILE NAME: BA-00014 270801091-0004 ISO 11-12-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX II (49)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field 🔻			
Filter Status	Analyzed 🔻			

EPA Sample Number:	BA-00014			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	942			
Date received by lab	10/21/2	800		
Lab Job Number:	270801	091		
Lab Sample Number:	27080109 ⁻	1-0004		
Number of grids prepared	5			
Prepared by	K. Barr	ies		
Preparation date	10/22/2	008		
EPA COC Number	L1465	i6		

Analyzed by	R. Pescador				
Analysis date	11/12/200	11/12/2008			
Prep	Direct	•			
ir sample type – air, is mere loose material or debris in the cowl?	No	•			
Counting rules	ISO (Air or Dust)	•			
Grid storage location	2708-EMR-99, A				
Archive filter(s) storage location	Westmon	t			
The reserve the 1990 of the contract of the 1990 of the contract of the 1990 o	September 19				
F- factor					
QA Type	Not QA	•			

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	0.002	Target Sensitivity
0.50		Minimum Length (um)		GOs required to reach target sensitivity
none		Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
E facts		alaulations	14	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

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COMMENTS

EPA SAMPLE ID: BA-00014 LAB SAMPLE ID: 270801091-0004

Sample Type Air Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by:

L. Ramowski

K. Lusher QA by: 12/2/2008

Data Entry date: 11/14/2008 QA date: Target Sensitivity Reached-Complete current GO, then stop.

Grid	rget Sensitivity Reached-Complete current G Grid Structure No. of Structures		·	5: 101 (1)							4	- 1-11-		Fract. GO		
	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Comments	Sketch	s, blank =	EDS	Chrys.
1	J1	ND	1 milety	erico de la composición	Assistantian l	VVIGITI	The state of the s		Service AV		ALTERNA	Comments	AND WAR	****		area a
1	J3	ND	1					NE SHELL S		4.00						
1	J5	ND												194	and the same	
1	J7	ND					0.2	Policina.	deur n		0.50			2.30	42.75	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1	J9	ND			***	La Tribe Paris	7 24 25	Daniel (4	7.64	40.645	100				Maga	
1	12	ND	2 200	Page 1982		224	i e successi i se e		200		and the second			4-15-7	4	
1	14	ND	a, 166	46.2	a Series	1.14 y y y 7.2	4-3-74-51.F	维护技术	egen j	200	15. 100			-1000	7.22	61.34
1	16	ND		11 - AA	260	1.00 to	The Reserve	ancia del		475.4	7/257	transferdage (all projects)	77.34	est serve	TO LANC	Magazine (
1	18	ND		A section	X 200	75.FF (2)	100	444					70.00	4.76-3	(Fight)	EQU:
1	110	ND		Service (Sec				Hara:		F-200	# 14 P	State of the same		1000	(Harris	45.45
1	G2	ND		25 0 A	7977		100	egr _e ye.		175 1	-274.32	er geranden (de	2,000			F 20
1	G4	ND					1 TO 1 TO 1			į.	3300	FORESCHIER CONTRACT	91,127,13		Title &	200
1	G6	ND	2000	经 扩展的			1000	der der		10 TO 10	7.5		ar Albert		经分类	
1	G8	ND		100		, <i>in the</i> tile	A Section 1		60 A	A. 14	75 (34)		Carrent St.	100	100	9 4.0
1	G10	ND		35 (5 K)		Jan en A	4.530	Bert de la company	7.25	dia d	4.45		持續		e to and	4.00
1	F1	ND					teri.				100			100		
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1	F5	ND_			100	452.7744	1000000		100		- 100	Sept. Co.	ia, tireti	编制性	A STATE	esta e
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1	D6	ND		Section .	200											
1	D8	ND ND									Tomas Comment				2.0	The second second
2	D10 I6	ND		97305 Sec.		II e e e e e e e e e e e e e e e e e e				7 50 2 10 10 2 10 10 10 10 10 10 10 10 10 10 10 10 10				7.0	4	3776
2	18	ND ND			Selection of the	71.71 (\$0.295)		2004							<u>Edi</u> toria. Cartania	-
2	I10	ND	100	Charles de 1850.	Series Silver			Salar Salar	100		7 9 10 10 10 10 10 10 10 10 10 10 10 10 10					
2	H7	ND		200					70 Part 11		150 at 150	The second secon	(A)	100		
2	H9	ND	- 1090	5 C C C C C	Digital Const		g - ggClindes.org	14-16-17-1	7,007	- 100 TAX 12	13052		100			1000
2	G6	ND						4-79 Jac	242		closes 3			370	727444	grigory and
2	G8	ND						S P I	10000	1.07.2	2000		100	100000	e de la compa	eu graugt
2	G10	ND	7.76	78.50 2.50	#IGNESS	Transmission in		7.537.000	arr s	120.20			4.40	4 (5 4 (5 %)		- A - C - C - C - C - C - C - C - C - C
2	F1	ND	170649	T. 6774.5	Contract			7865				College State College	100	· Park is	1	of Rock
2	F3	ND		Sec. Sec	10		100000	421(44)			1684			20.75		

2	F5	ND	
2	F7	ND	
2	F9	ND	
2	E10	ND	



SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00023 Not QA

QA Type Not QA
Lab Sample Number 270801091-0005
Sample Type Air

Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

960 L

7.91E-04 s/cc

7.91E-04 s/cc

Recording Rules:

 Min. AR
 Min length (um)
 Min width (um)

 ≥ 3:1
 0.5
 none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
***************************************	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00023_270801091-0005_ISO_11-12-08_D.xls

FILE NAME: BA-00023_270801091-0005_ISO_11-12-08_D:xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27					
Instrument	JEOL 100 CX (49)					
Voltage (KV)	100 kV					
Magnification 19,000						
Grid opening area (mm2)	0.0130					
Scale: 1L =	1.000					
Scale: 1D =	1.000					
Primary filter area (mm2)	385.0					
Secondary Filter Area (mm2)	360.0					
Category	Field 🔻					
Filter Status	Analyzed T	-				

EPA Sample Number:	BA-000	23			
Sample Type	Air	•			
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	960				
Date received by lab	10/21/2	008			
Lab Job Number:	Number: 270801091				
Lab Sample Number:	27080109	1-0005			
Number of grids prepared	5				
Prepared by	K. Barr	ies			
Preparation date	10/22/2	800			
EPA COC Number	L1465	66			

Analyzed by	R. Pescad	R. Pescador			
Analysis date	11/12/200	8			
Prep	Direct	•			
ir sample type – air, is there loose material or debris in the cowl?	No	~			
Counting rules	ISO (Air or Dust)	•			
Grid storage location	2708-EMR-9	9, B			
Archive filter(s) storage location	Westmon	t			
energenergen beschieden. Geografie des Beschiedens					
F- factor	1				
QA Type	Not QA	•			

Recording Rules:

≥ 3:1

Stopping Rules:

3:1	•	Minimum Aspect Ratio	0.002.	Target Sensitivity
0.5	0	Minimum Length (um)	1 12	GOs required to reach target sensitivity
nor	ie	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
£4	C	-11-47	13	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

COMMENTS

EPA SAMPLE ID: BA-00023

LAB SAMPLE ID: 270801091-0005

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

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1	arget	Sensiti	VIIV H	(eac	ned-	Comple	ete curre	nt G	(3.stn	en stop	où.

Grid O	Grid Opening	Structure	No. of S	tructures l	Dimond		Target Sensitivity Reached-Complete current GO, then stop: Grid Grid Structure No. of Structures Dimensions (a) Identification Mineral Class (b) 1 = yes, blank = no Fract.									
	Opening [Identification									Fract. GO
1 1		Туре	Primary	Total	Length	Width		LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
	G1		T PORCH	, we will be considered		ar &	200	通 类(2)		2.48.7	34.00 mg			27.622	ika sa	
1	G3	ND	Tref to			Track to profit	100	W. Carl	George St.		100	STORES OF STREET	10 de	100		
1	G5	ND	1 14		1426		4.75%	457 2.10	20.57			range sage (fig. 198).	Part Inc.	1. 3		
1	G7	ND	5500.00	100		des.	100	4 1	450	Sear Sear	10.00		41.00	3044	10 T	
1	G9	ND					1981		1177				10.	1.00	a spet	
1 1	F2	ND							30.00	25.6%	ara s			100		
1	F4	ND	3-24		3.4.6			14.	26 44 5	47.43		1 Jan 2 1 1	79	200		11.00
1	F6	ND						200					10.00		W. Dri	
1 1	F8	ND	the grant beat	1000	199		1.40	(P) (1-14)		31.	1000	No. 20 Profession Control	So zarreješ	73.00	17.5	444
1	F10	ND			144,990/47				99.70	W. S.	17.00	A STATE OF THE STA	9.34	700		146 P
1	E1	ND				266		42.7		16.0	24					
1	E3	ND	2.50									10 mm - 10 mm				
1	E5	ND				5-16-7								7.4		
1	E7	ND						1000	(Children	4.4	* ***		24 30	4 1 2	and the second	**************************************
1	E9	ND	100								1000		7 3 3 4 3 6			
1	D2	ND					140.00	34-74-74			7,0772	Activities to the second secon				
1	D4	ND				2.0	12 (49.5%)	12000			40.00				Car	
1	D6	ND	100						7.25		100		444	The second of		
1	D8	ND ND							3000		2022455			1000		
1	D10	ND ND	4.44			grant to the second			Marie and the	erio de la composition della c	1000			200		YM
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1	C7	ND ND	100	9	564				100		424				Sign of the	
	C9	ND ND						62000000			#1144C#					
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2	J3	ND							200.00		1000		100			
2	J5	ND			de la companya de la			144					Serve con			
2	J7	ND		Sales and the				440					76.2387734	Location		
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2	14	ND		Company of the Company	9,140,100	90 06	The second		20.	7	4.70	Topic Programme				
2	16	ND			3 1 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			100	100	38 y	9000		760 to 200			
2	18	ND			Carrie and	Alleria i		## EE 25 F	1 10000	67.00	CASE III		nea feet a significant	1688		
2	110	ND	1000	Service Control		THE RESE	110000000	100,000				1964 C 2017 PM 54 25				2222

2	H1	ND	
2	H3	ND	
2	H5	ND	
2	H7	ND	

Versic

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

Category

Prep

Analyzed BA-00024

QA Type Not QA Lab Sample Number 270801091-0006

Lab Sample Number Sample Type

EPA Sample Number

Air Field Direct

10312

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00

Number of Grid Openings (amphibole) 39

Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 953 L
Sensitivity (amphibole) 7.97E-04 s/cc
Sensitivity (chrysotile) 7.97E-04 s/cc

Recording Rules:

Counting Rules

Min. AR Min length (um) Min width (um)
≥ 3:1 0.5 none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK

Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
ľ	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

SM

FILE NAME: BA-00024 270801091-0006 ISO 11-12-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27	
Instrument	JEOL 100 CX (49)		
Voltage (KV)	100 k	V	
Magnification	19,000	Χ	
Grid opening area (mm2)	0.0130		
Scale: 1L = 1.000			
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field	•	
Filter Status	Analyzed	•	

EPA Sample Number:	BA-00024			
Sample Type	Air	-		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	953			
Date received by lab	10/21/2008			
Lab Job Number:	270801	091		
Lab Sample Number:	27080109	1-0006		
Number of grids prepared	5			
Prepared by	. K. Barı	nes		
Preparation date 10/22/200				
EPA COC Number	L146	56		

Analyzed by	R. Pescador			
Analysis date	11/12/200	8		
Prep	Direct	•		
il sample type – air, is there loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-9	9, C		
Archive filter(s) storage location	Westmon	t		
Brigoria de entre de la composição de la	V. Dip loty/irro			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

	≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
	0.5	0	Minimum Length (um)	Lacor 8. 27 4 17 (20) 1. 1 (4)	GOs required to reach target sensitivity
	nor	ie	Minimum Width (um)		Maximum # of GOs
				50	Maximum # of Structure
	F-fact	or C	alculation:	13	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction: V

COMMENTS

EPA SAMPLE ID: BA-00024

LAB SAMPLE ID: 270801091-0006

Sample Type Air Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

Target Sensitivity Reached-Complete current GO, then stop.

Grid	Grid	Structure		Structures		ions (a)	Identification	Ì	Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gna	Opening	Туре	Primary	Total	Length	Width	denuncation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	Version (*)	建筑。22学	activity of	a service and			2/25/47		700				a serial in	
1	J4	ND	3100			43.0		72.	100		4.5.0		1567.44		£1354	
1	J6	ND		4.5.7	1	200	3.00	100	7.3		7.77			18,90	ian is	74 174
11	J8	ND				40000	Total Control				學學學		2442	* 4.1		
11	J10	ND	100	186		4. 美国	illa sur		a and						in P	72.0
1	11	ND			70,000						2000			425		A Marie
1	13	ND				10.71	Page 3	12,000	1.6.2		45 p. 3		300	100		
1	15	ND .	1787.12			2 2 2 2	\$50°+27		100	2.00	100		C 2007	(40 g., i.		4
1	17	ND	10.00	100		100	24 4 1 h	\$15.4 S	1000	77.64			- 15 Feb.			
1	19	ND		A Section 1	3 200 314	70: 37. 3		1.00	4.5		1000		10 years	1000		
1	H2	ND	**************************************				200		1000		9000			3.5	1,847	34.44
1	H4	ND				1955 and 19	Fig.				推推			1		
1	H6	ND	4 m		4			W. 18. 18. 18.	200	*10	Television	7		11.4.	1906 275	en en en
1	H8	ND			Service Services		\$100 A	40.0	0.000			1000	of the			200
1	H10	ND	N. S.	100	265	353 453 41	第一次	4-11/4	16277	0.00	Sept.		100		* W. A.K	riĝy: Elik
11	G1_	ND	###Cong		1050		56		3.77		100			200		
1	G3	ND	1000	120		40.00			17.00					30.00		
1	G5	ND	Section 2		49600						10 M			Alleria .	evis.	Language Control
1	G7	ND						4.4-4.5	200	4 (A () A ()				8:1:	V CONT	(F) (F)
1	G9	ND			1, 100					Aceria		- 755 500	7.00	7.7		
1	F2	ND	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.49	200	110 (144	Special Control	# 5 PA 61 2	1000		F4 (***)			70.00		
	F4	ND	1000	· 中国 1	4.7	250	762		4.4			17.4.3.4.6.3.4.6				
	F6	ND	14.00			4 19 Sales			1.000	12 12 14				In the same		
	F8	ND				75.00								98		4.50
	F10	ND	A STATE OF THE STATE OF		14.54			1442		200	1000			# 10 m		
2	J1	ND				100	312 E7 - C - C - C - C - C - C - C - C - C -		100	A Section 1	201.00			4.0	22.00	
2	J3	ND ND			***	All and the second	TO SALE OF THE SAL	The state of the s			1000		CHEST TO SEC	Tearter.		
2	J5 J7	ND ND						F	3		() () () () () () () () () ()				495,5015 636,699	
2	J9	ND	A second second		70.00				FE 81,2540		Service Control		2,000			Constitution of the consti
2	12	ND	4 / Jan 19 / 19 / 19 / 19 / 19 / 19 / 19 / 19	200		199 (1984)		420 Sec. 25-2	100		Andrews		37.7			4.2 75 P.
2	12	ND ND		120122		4-14-14		7.7			9000 (F)		445,450		Parkers of the second of the s	
2	16	ND ND	Control of the Survey				Market State of the State of th		200		120000000000000000000000000000000000000				and a gradual dis	10 To
2	18	ND ND	TOTAL STREET		2 2 2 2					Andrew S			100	48.000		200 SE-200
2	110	ND ND	10 1 10 1 10 10 10 10 10 10 10 10 10 10		10.00	and the second			73.73	1.0	4815		20 marine in 1972	4.00		24.2
	110	עאו ן	**************************************	and a second	-714 Mag 28	The Automobile		Trace of S			Total Marie		447	2.4	44 × 6	

2	H1	ND	
2	H3	ND	
2	H5	ND	
2	H7	ND	

Versit

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00032

Not QA 270801091-0007

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 780 L
Sensitivity (amphibole) 9.74E-04 s/cc
Sensitivity (chrysotile) 9.74E-04 s/cc

Recording Rules: Min. ARMin length (um)Min width (um)≥ 3:10.5none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

			* * * * * * * * * * * * * * * * * * * *		
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00032_270801091-0007_ISO_11-12-08_D.xls

12/2/2008, 3:05 PM

SM

FILE NAME: BA-00032_270801091-0007_ISO_11-12-08_D.xls

FILE TYPF. Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27				
Instrument	JEOL 100 CX II (49)				
Voltage (KV)	100 kV				
Magnification 19,000 X					
Grid opening area (mm2)	0.0130				
Scale: 1L =	1.000				
Scale: 1D =	1.000				
Primary filter area (mm2)	385.0				
Secondary Filter Area (mm2)	360.0				
Category	Field 🔻				
Filter Status	Analyzed 🔻				

COMMENTS

EPA Sample Number:	BA-00032		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	780		
Date received by lab	10/21/2008		
Lab Job Number:	270801091		
Lab Sample Number:	270801091-0007		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/22/2008		
EPA COC Number	L14656		

Analyzed by	R. Pescador		
Analysis date	11/12/2008		
Prep	Direct	•	
ir sample type ≠ air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-99, D		
Archive filter(s) storage location	Westmont		
i kan de grand die en de 17 de <mark>18 ks</mark> Geografie die 18 grand de 19 kg	to in a regit in		
F- factor			
QA Type	Not QA	~	

Recording Rules:

≥ 3:1

Stopping Rules:

Estimated # of GOs

3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
nor	ıe	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
			ALCOHOLD STATE OF	

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

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Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00032 LAB SAMPLE ID: 270801091-0007 Sample Type Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

Target Sensitivity Reached-Complete current GO, then stop.

Grid	Gríd	Structure	No. of S	tructures	Dimens	ions (a)	Identification	ļ ,	Mineral C	lass (b)			1 = yes, blank = no		= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	lacitination	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	477 474	计学学数	9,757,000	6 - A - A - A - A - A - A - A - A - A -	艾尔森斯 经营	200 Y	3.63		37.5		300	C 34, 4 (C)	1.4	建一大电影 工
1	J4	ND	ii Hito	37 S. 376	10.75	C. V. L. C.		7.10	\$ 18 C	4 %	STATE		30.0		10.0	arthropelic
1	J6	ND			1 1 1 1 1 1 1		1000	1000		V		4 . 32.5				
1	J8	ND		13.4	4.1.500		100	CSANOFA	200	r v	4.00		er er er	4354	a bata	4.6.80%
1	J10	ND	2.00	100	30 TO 10 TO	are in	And Sales	### Z	25.00		ATT I					F # 18 %
1	H2	ND					2.7				95.9			Part Control	Miles.	
1	H4	ND	77.4	74.4		7 14			10	***	2.5	14.0 To 12.0 To 10.0		4.0		F 30 35 6
1	H6	ND	100	100	N 1/20-16-05	19 C 19		25.00					(A) 1444	2,524		安然是 第5
1	H8	ND	ar e										100,000	1000	39360	3,429.1
1	H10	ND		S. S. Yes	\$	84 in 15		ALT:		19. 7	19.19			100		
1	G1	ND	1.24			60.0			Mary Control		W (C. 16)		W 384	29191264	4 (4.4)	ASSESSED OF
1	G3	ND	100.00			ates as a		16.44			76.74			7.00		Transfer of the
1	G5	ND	100	100	40.00						200					1000
1	G7	ND			100.00		100	TRACE STATE			280 (T) (24			100	4 4 4	- Cell (C.)
1.	G9	ND			## F			Sec.		3.549			1000	100		100
1	F2	ND	7.		75.74	A Property	(A)		700-00		75		0.000			
1	F4	ND		21.25	* T. T.		100	The Sale			200.3					10.00
	F6	ND	3.5			0.43		200		(SA)			1 10 10	100		Te in the second
1	F8	ND		200	45850		2007-000-000	363 - 376		Constitution of the Consti			a and a second	300		
1	F10	ND	200				14.	No. of Contrast of	Anales Company		100 200			Court was		A STATE OF
	E1	ND				Section 1		3,00	September 1	200	5-4300 pm		10000000	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		
	E3 E5	ND ND	340		Strategic and		10 miles	200		Access to	200 mg/125		Suin at Feb.	214.00		
<u>1</u>	E7	ND ND														
-	E9	ND				SACRE SE		46.46.46.46		and the same of	5.4 683			100		
2	I1	ND							51.00 E		0.00		1	L		
2	13	ND						The second second		144	1077			pro plant		The state of the s
2	15	ND	# 17:14 P			NEW AND ASSESSMENT					113.06					100
2	17	ND	3,400		45.4	and the second		1000	100			and the second s		* 1	200	
2	19	ND			20130 AM		- 100	25-25-00	Program		1000		The second second			
2	H2	ND	19.00	100				100		4 4	7000			-1-25		
2	H4	ND	12.00	100		10.0	1000	Transfer and the			The Car				100	100
2	H6	ND	No.	1000	234000		7.0	2004200 X	profession of	\$1500 HOVE	en soat	175 196 197 197				4.
2	H8	ND	Transfer of	1.2. 15%	P\$ 102		14	100000	1			ST JAMES CO. ST. ST. ST. ST. ST.			4.	
2	H10	ND	4.44	ra ideliti	1000		1000	year regards	34.43	4.	1.00	and the state of t	and green	40,000	1 (4)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

2	G1	ND	
2	G3	ND	
2	G5	ND	
2	G7	ND	

Version

SAMPLE ID

Status Analyzed EPA Sample Number BA-00033 QA Type Not QA 270801091-0008 Lab Sample Number

Sample Type Air Category Field Direct Prep Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 1.00E+00 Indirect factor Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 658 L Sensitivity (amphibole) 1.15E-03 s/cc Sensitivity (chrysotile) 1.15E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
۶	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

OK OK Check Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	đ	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00033 270801091-0008 ISO 11-12-08 D.xls

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification 19,000			
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed		

EPA Sample Number:	BA-00033		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	658		
Date received by lab	10/21/2008		
Lab Job Number:	270801091		
Lab Sample Number:	270801091-0008		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/22/2008		
EPA COC Number	L14656		

QA Type	Not QA	•			
F- factor					
zmen na monte e esta militaria. Santa in include desta de la compositoria de la compositoria de la compositoria de la compositoria de la compo	ordine Sheet de				
Archive filter(s) storage location	2708-EMR-99, E Westmont				
Grid storage location					
Counting rules	ISO (Air or Dust)	•			
loose material or debris in the	No	•			
Prep	Direct	•			
Analysis date	11/12/2008				
Analyzed by	R. Pescador				

Recording Rules:

Stonning Rules

	recording	(Kules.	Stopping Rules.						
	≥ 3:1	Minimum Aspect Ratio	0.0024	Target Sensitivity					
	0.50	Minimum Length (um)	1 200	GOs required to reach target sensitivity					
none		Minimum Width (um)		Maximum # of GOs					
			50	Maximum # of Structure					
	F-factor C	alculațion:	19	Estimated # of GOs					

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

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Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: BA-00033

LAB SAMPLE ID: 270801091-0008

Sample Type Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: QA date:

K. Lusher 12/2/2008

Data Ent	try date:		11/14/200	88			QA date:	12/2/200	18							
Target Sensitivity Reached-Complete current GO, then sto					р.		*									
Grid	Grid			tructures	Dimens		Identification	Mineral Class (b)					1 = yes, blank = no			Fract. GO
Ond	Opening	Type	Primary	Total	Length	Width	I demindation	LA	OA	C		Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND		476.75	15.00	***	10 Jan 17 12		200	****	A VALUE	a state of the control	- 155.90G	## # E		talification.
1	J4	ND		22.865	****	30 (100 m)		A HERON			424		43.24	3.00 M	78.7	1 4 1 m
1	J6	ND		11	200			48 a. 37 8	700	\$2.3-i	11.23			17.6		0.71
1	J8	ND	3 Table 1	19.00	100		+40	Feet of A	2.00		1.0	A Water Comment	5000	10.40		Section 1
1	J10	ND		1000		Alexandra Lighten	9.23	3.4							200	* \$ A.O.
1	H2	ND		Are Assets			27.25		200	(1. The	278.22			7653770	122	
11	H4	ND		1.00				原产品	7.75 A	7,75	450			25.00		-2.00
1	H6	ND	7.52	A T 1940 W	200			3.0	Charles	3.0	40.75		1.00			
1	H8	ND		100	100	100		187-155			110	A DESCRIPTION OF THE PROPERTY	4.54.5	10275		
11	H10	ND	e de la companya della companya della companya de la companya della companya dell	1,000,00				aller with	Maria III	14.00	g #6 # 55			Substitution (Control		
11	G1	ND	2-15-2-1-15-1	200	44.00			200	100		2.1942					
11	G3	ND	- 21-72	- 11 11 11 11				12000	4 mov.		17.50		- 76	44.0	266	100.57
11	G5	ND		4.5		ares a fa	100	24 F						7.00	e jedkih	2
1	G7	ND		200	1.0			100	93,44		4000					
1	G9	ND	7				777	346					7-2-1	100		
1	F2	ND		pec =		A STATE OF THE STA			F-12	7,52				And the second		
11	F4	ND	Co. (C. 1274)	- STANDS				76-53-52	SECRET 1. 1	7	7 72					
1	F6	ND			1000		10.7	- T	200		76100			106-		A
1	F8	ND							2009	5 (c) (c)	40 C 40 C		Certail (Certail)	kari Shiffe La	2584	
11	F10	ND		10 E 10 E 10 E 10 E						Party of the Control	200			a participant		3.00
1 1	E1	ND		7.00	100 C			48.0	ber et		7 C. A.			State of the state		7 mm to 1
1	E3	ND ND	100	(F1) (B) (F1)		er berne		100	30000		75.07.29	A Property Services (Control of Control of C				1-1-1
1	E5 E7	ND ND		75 - 1987 - 1987						12.54	200			0.5		
1	E9	ND	10.00						200	24.2						ALCOHOL VA
2	J2	ND ND		100	Section 1				100	Jan Gara	100		7.8			100 100 100 100 100 100 100 100 100 100
2	J4	ND			Section 1		70 70 6 10 8 10	100000		4-14-15						
2	J6	ND	200			- 15 (Fig. 4-)		Company Laboratory	(100 to 144 to 1	24-6	1.0	10,046	enco di salah			Sala de CEAS
2	J8	ND								101-2-1	1		3			
2	J10	ND		100	76.6	No.		1500	200	A Carr	30.7		100			Section 4
2	H2	ND		Service S					Special Control		di Tabu					Or of the second
2	H4	ND	200	10010000	district the second	200		Marka et			7,700	3.00		1		
2	H6	ND		100	100	arth es		Control of the Control	in series	A CONTRACTOR	200		Stationary -	120		
2	H8	ND		12.71100	a substant			5,550	September 2					43.0	* *	- September 19
2	H10	ND						(4) (4)		1.50				100		200
	1 1110	110	Postan property and and	- VANDAGE CHEST CONTRACTOR	1-1-1-1	- Manager Moudal But Sold . Ja	The state of the s	-Later Sand Control of the	To the Control of the	Take Carried	LANCTHE STREET	The state of the s	Committee of Programme	A. 200 S. S. S. S. S.	中國257/國第6年	A Property of the Party of the

2	G1	ND	
2	G3	ND	
2	G5	ND	
2	G7	ND	

Versi

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed BA-00040 EPA Sample Number Not QA QA Type 270801091-0009

Lab Sample Number Sample Type Air Category Field Prep Direct

Counting Rules

PARAMETERS

Effective filter area 385.0 mm2 1.00E+00 Indirect factor Number of Grid Openings (amphibole) 16 Number of Grid Openings (chrysotile) 16 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 780 L Sensitivity (amphibole) 2.37E-03 s/cc Sensitivity (chrysotile) 2.37E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

10312

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

			4 /		
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total OK 0

CONCENTRATION (s/cc)

	11011 (0/00)				
Bin	LA	OA	C	PCME(all)	PCME(asb)
a	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00040_270801091-0009_ISO_11-13-08_D.xls

12/2/2008, 3:12 PM

FILE NAME: BA-00040_270801091-0009_ISO_11-13-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX (49) 100 kV 19,000 X 0.0130 1.000 1.000 385.0 360.0			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385,0			
Secondary Filter Area (mm2)	360.0			
Category	Field			
Filter Status	Analyzed			

BA-000	40	
Air	•	
780		
10/21/2	800	
270801091 270801091-000		
27080109°	1-0009	
5		
K. Barr	ies	
10/22/2	008	
L1465	i6	
	780 10/21/2 27080109	

Analyzed by	R. Pescad	or
Analysis date	11/13/200	8
Prep	Direct	•
ir sample type – air, is there loose material or debris in the	No	•
Counting rules	ISO (Air or Dust)	•
Grid storage location	2708-EMR-99	9, F
Archive filter(s) storage location	Westmon	it
i de tra que como el que trata e para Casa de Casa d		
F- factor	2000 Pages 1	
QA Type	Not QA	•

Recording Rules:

Stopping Rules:

Z-18-1				
≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
0.5	0	Minimum Length (um)	16	GOs required to reach target sensitivity
non	ie	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	16	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

٧ Grid opening traverse direction:

EPA SAMPLE ID: BA-00040 LAB SAMPLE ID: 270801091-0009 Sample Type Air Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

	and were the entire of the street for the professional	The same of the second of the	外感冒的感染的人的 化二氯化氢化化氮化
Tarnet Sensitivity	/ Reached-Cor	nplete current GO,	then ston
ELGIGOL OCHOLLIAIC	I TOUGHTOU OF	IIDIOCO GUITOITE OC	THE PROPERTY OF THE PARTY OF TH

arget S	ensitivity	Reached-	Complete	current GO), then sto	p.	Sylverial and the second									***************************************
Grid	Grid	Structure	Structure No. of Structures		Dimensions (a)		Identification	Mineral Class (b)					1 = yes, blank = no			Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	Identinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND	2.4	40.00	A Comment	oración programa La estratación		1846	Some St	raski	3777		Here was	447 4 0	100	11.0
1	J 3	ND	12.7	27. T. S. W.			1345.7	25.0	400 V	* 3.77			100	A 45		
1	J5	ND	4.775		35.5	3 - 43		37.27.00	Land	2.5	2.2					444
1	J7	ND	1	10.00	***	S. Jan 17	4 10 10 10 10 10 10 10 10 10 10 10 10 10	200	#7.e.	1,12	42.3	prise de la Section de la constante de la cons				100
1	J 9	ND		16 (3)	376 375 4	90.00		400	* 17.56	1000	100	Transfer Commence				
1	H2	ND	410				44.66						100		7724	
1	H4	ND					116 (15-17)	15.00		44 Sept.	3.425%		7. 744			HAR. 1
1	H6	ND	100	+ (7) - 3	*		4 7 7 7	ALC: N	3 17 17	100		A CONTROL OF THE STATE OF THE S				\$160 T.
1	H8	ND	100			是,并没是	4.4	200		1 24	7.96	All Markets and the second		4, 4, 5, 6,		
1	H10	ND		10.00	6 20 m	34.4	100	101.7	7.5	1 dish	100	1000 to 1000 t		40000		
2	F1	ND		Part Say		Fig. (c)		Marie .	X 4 45	10.00		Control of the second	3.54	10.1	基份基	Miles III
2	F3	ND					1740	\$ P.	\$ F	1111	- 300		14.70.00	100		1111
2	F5	ND	100	200			10 Marie 186				17.00	Contract Con	4.4	1		
2	F7	ND	P- 32.5	13.44	#700 X	40.00	4. 500000	機等	F	198	- 機能	Season and the season	27.34			
2	F9	ND	1818 C. 1888	Track.	\$77°	150.00	4.7	april 1		100000	elf to the	State of the state	12.70		and the	
2	E8	ND	6 P140F30	1. The second se			24800	18 (18)	为其遗	3.723		TO SECURE A				2.6

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

QA Type

Analyzed BA-00041

BA-00041 Not QA

Not QA 270801091-0010

Lab Sample Number Sample Type Category Prep

EPA Sample Number

Air Field Direct 10312 **PARAMETERS**

Effective filter area Indirect factor

385.0 mm2

Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 18

Number of Grid Openings (chrysotile) 18
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 718 L
Sensitivity (amphibole) 2.29E-03 s/cc
Sensitivity (chrysotile) 2.29E-03 s/cc

Recording Rules:

Counting Rules

 Min. AR
 Min length (um)
 Min width (um)

 ≥ 3:1
 0.5
 none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK

Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
e	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	a			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00041_270801091-0010_ISO_11-13-08_D.xls

12/2/2008, 3:14 PM

SM

FILE NAME: BA-00041 270801091-0010 ISO 11-13-08 D.xls

Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed 🔻		

EPA Sample Number:	BA-00041		
Sample Type	Air	•	
Air volume (L), oust sample area (cm2), or dustfall container area (cm2)	718		
Date received by lab	10/21/2008		
Lab Job Number:	270801091		
Lab Sample Number:	270801091-0010		
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/22/2	800	
EPA COC Number	L14656		

Analyzed by	R. Pescador			
Analysis date	11/13/2008			
Prep	Direct	~		
ir sample type – air, is there loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-99,			
Archive filter(s) storage location	Westmont			
Erfeldfiedigeren et en sam en s Comment in en service	gu fre gynyfu	CL *		
F- factor	1			
QA Type	Nat QA	•		

Recording Rules:

Stopping Rules:

≥ 3:1	Minimum Aspect Ratio	0,002.	Target Sensitivity			
0.50	Minimum Length (um)		GOs required to reach target sensitivity			
none	Minimum Width (um)		Maximum # of GOs			
		50	Maximum # of Structure			
		18	Estimated # of GOs			

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

V

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: LAB SAMPLE ID: BA-00041 270801091-0010 Sample Type Air Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by:
QA date:

K. Lusher 12/2/2008

nsitivity Reached		

Grid	Grid	Structure		of Structures Dim		No. of Structures Dimensions (a)		Identification	Mineral Class (b)				1 = yes, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С		Comments	Sketch Photo	EDS	Chrys.
1	12	ND		7,125,73.5		Charles			PLANTS.		1170	STATE OF THE STATE	ALC: TO THE SE	10 P. 2	W. 3 * 2 * 2 *
1	14	ND		apparate profit	200 M	Maria A	San San San				3.378			新安徽	80 ST 10 ST 10
1	16	ND			2000	第 个第二			4.7.		100				
1	18	ND		Territoria de		10.054		33,503			1 2 4	275 1878 F. S.			4.9
1	110	ND						35			20-50	CONTRACTOR OF STREET		ta di	
1	C2	ND			Sec.		A 11/25 A 12/15			tragar.			100		
1	C4	ND					7.5	\$10 mg		Kraft.	3 42 1		10.00	\$ 44.0°	7.4
1	C6	ND		44.14		10 m	Track to the	67 × 2	71 Tax			**************************************	100	湖麓	
1	C8	ND				Marine A	1000	100	32.54		17.16.2	SW SERVICE CO.	7.79		
1	C10	ND		*#####		14.00	3.00	500 T			V114	3.275 Table 1.		WAR	
2	F1	ND						建 数率分	4	對當時	200		4884		7.7
2	F3	ND			100 m	1.4.4		32 (4)		41.752	12/1	WARRY CO.			
2	F5	ND		1512.04		2 TAN		AND STREET,	1440 为5		100			400	
2	F7	ND	4.4		4.77	ar establis	144 (120)			A County	1971(25)	A. Carrier and Car	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		
2	F9	ND	,010 TO 100 TO 1		824		445 7 FF 63				70	and the second second	Constitution of the second	30%	Agree .
2	E6	ND	2.2	1.00			- CO 15 15 15 15 15	47.74			120		24 PM		
2	E8	ND	7 T. 18		Carlo Park	- 4				27/2	- 2.54			ing a	
2	E10	ND						42.70		STATE OF	4.736	Part Control		7216	

PARAMETERS

Status Analyzed BA-00050 EPA Sample Number Not QA QA Type

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 16 16

Lab Sample Number Sample Type

SAMPLE ID

Number of Grid Openings (chrysotile) 0.0130 mm2 Grid opening area

Air Category Field Direct Prep Counting Rules 10312

Volume (L) or Area (cm2) 806 L Sensitivity (amphibole) 2.30E-03 s/cc 2.30E-03 s/cc Sensitivity (chrysotile)

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801091-0011

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00050 270801091-0011 ISO_11-13-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100 kV
Magnification	19,000 X
Grid opening area (mm2)	0.0130
Scale: 1L =	1.000
Scale: 1D =	1.000
Primary filter area (mm2)	385.0
Secondary Filter Area (mm2)	360.0
Category	Field
Filter Status	Analyzed 🔻

EPA Sample Number:	BA-00050			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	806			
Date received by lab	10/21/2008			
Lab Job Number:	270801091			
Lab Sample Number:	270801091-001			
Number of grids prepared	5			
Prepared by	K. Barnes			
Preparation date	10/22/2008			
EPA COC Number	L14656			

Analyzed by	R. Pescad	R. Pescador			
Analysis date	11/13/200	8			
Prep	Direct	•			
If sample type – air, is there loose material or debris in the cowl?	No	•			
Counting rules	ISO (Air or Dust)	•			
Grid storage location	2708-EMR-99), H			
Archive filter(s) storage location	Westmon	t			
por the profite black new to be seen to be fall to be been and	36, U.S. 1931 193				
F- factor					
QA Type	Not QA	•			

Recording Rules:

Stonning Rules

Kecorun	ių Kules.	atopping r	tules.
≥ 3:1 🔻	Minimum Aspect Ratio	0.002	Target Sensitivity
0.50	Minimum Length (um)	1 16	GOs required to reach target sensitivity
none	Minimum Width (um)		Maximum # of GOs
		50	Maximum # of Structure
F-factor	Calculation:	16	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial

dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction: ٧

EPA SAMPLE ID: LAB SAMPLE ID: BA-00050 270801091-0011 Sample Type Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: QA date:

K. Lusher 12/2/2008

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- memme	CAMALITICAL	TI DAAANA	1 / Amal	ete current		hon ct	nn .
I aluet	other in the	v realiet	1-COLLIE	ele Cuilen		HEIL SU	JU.

Grid	Grîd	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	class (b)			1 = ye:	s, blank	= no	Fract. GO
Gila	Opening	Type	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	12	ND	174.6%	400			and the second	(\$ 2) e (\$	77720	SAC TE	南京 《城		100	n Thank	**************************************	Contract Con
1	14	ND	77 27 Sec.					7747		2.4			4	172		Section 1
1	16	ND								March.	4.30					
1	18	ND		30 公司	Control of		*15.4 (4.2.5)	10000		355	10,000					150,000,00
1	l10	ND		77.7				500.113	4.40%	2.56	(F. 17)		ALC:	0		
1	G1	ND	数数数	4						4267	MS. F		********			44.403
1	G3	ND	(4) (A) (A)		1968 P.S	4.0		100		440			37.2			9
1	G5	ND	#17 · 7 · 37		*******		100	100	激制	Mark.	11.0					
1	G7	ND	16 m 18 18 18					1017		100	7.00					4 4 4 7
1	G9	ND	300			342.4	William P. State	10 May	1.44	Sec.	May a se	the state of the second				
2	11	ND	建 外企业		Fig. States	100	* 999 (1987)	1000	建筑 和		34, 1318				- 18 VI	4.27
2	13	ND				274		18.0			11334		1.0		1.000	\$450 E.S.
2	15	ND	2.5	100	esta Septific			100	200			1000 PER 1200 PER 12				grant of
2	17	ND	4,36		45 × 144				4/6/3		79 (75)			3.86		Aug Dar
2	19	ND			178.6				No.	38.30	N. CONT.		1000	40	me g	100
2	F9	ND	A Property Comments		A 1	4.44 A. (1)		10 A.			1.74	1966		1.00		

Versi

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00051

Not QA 270801091-0012

Sample Type Air Field Category Prep Direct 10312 Counting Rules

PARAMETERS

Rules:

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 17 Number of Grid Openings (chrysotile) 17

Target S

0.0024

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 791 L Sensitivity (amphibole) 2.20E-03 s/cc

Sensitivity (chrysotile) Stopping

Max GOs Max N

50

2.20E-03 s/cc

Recording Rules:

Min. AR Min length (um) Min width (um) ≥ 3:1 0.5 none

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	ОК		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	a			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<≃.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00051_270801091-0012_ISO_11-13-08_D.xls

12/3/2008, 8:34 AM

FILE NAME: BA-00051 270801091-0012 ISO 11-13-08 D.xis

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

EMSL27
JEOL 100 CX II (49)
100 kV
19,000 X
0.0130
1.000
1.000
385.0
360.0
Field
Analyzed 🔻

EPA Sample Number:	BA-00051			
Sample Type	Air 🔻			
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	791			
Date received by lab	10/21/2008			
Lab Job Number:	270801091			
Lab Sample Number:	270801091-0012			
Number of grids prepared	. 5			
Prepared by	K. Barnes			
Preparation date	10/22/2008			
EPA COC Number	L1465	i6		

Analyzed by R. Pescador			
Analysis date	11/13/2008		
Prep	Direct	•	
II sample type – air, is there loose material or debris in the	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-99, I		
Archive filter(s) storage location	Westmont		
Transación de la composición del la composición del composición de la composición de la composición del composición del composición de la composición del composic	to the destrict		
F- factor			
QA Type	Not QA	~	

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	0,002,-7	Target Sensitivity
0.50)	Minimum Length (um)	1 16	GOs required to reach target sensitivity
none	е	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
			16	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

Sample Type EPA SAMPLE ID: BA-00051 Air Prep Direct Count Rule LAB SAMPLE ID: 270801091-0012 10312 QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: L. Ramowski QA by: K. Lusher QA date: 11/14/2008 11/2/2008 Data Entry date:

The second of th	the second of the second of the second of	and the state of t	A Company of the Comp	7.0
Target Sensitivity	Resched Comp	OTO CHITTON	(() thon etan	140
ander ocholinaris	Treatment Commit	icle current	r ooth mich arob.	26

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
GIIG	Opening	Туре	Primary	Total	Length	Width	lacitilication	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	F1	ND	773.00	- 1 TO 10 TO	200	New Y		學。在《	784 2	建始				4.72.19	C C AND	2007
1	F3	ND	2564年)				3 2 3		23 (2)	1200	100-1104	3583 (58E)		2002	Fells Je	Article Fra
1	F5	ND		, A204		5	4.4.4.2.22	2.77	72.00	14.354	7:33	10.000	100	- 242		
1	F7	ND		1.43	4.575	3	2616	316 Te		\$15.0 kg	233	19 10 10 11 11 11 11 11 11 11 11 11 11 11				American Commencer
1	F9	ND	新疆外		张宇宙			5.4	272		2 44			76.75		
1	D2	ND			76.3			Charles To the Control of the Contro	建 集化	400	23.3		A STATE OF		12.2	
1	D4	ND	4.77		3 / 4 / 4		14.7 医腹膜	4.5	建	100	5,000	Control Control Control	4.24.37A)	15-15		11.00
1	D6	ND	电影	7-2-2-18	A 125 F		2.5	100	200		12.0					200
1	D8	ND	157.4 4.52-7	- 100 PM	434	第 12.5 在		75.3 KW	78	200	175				m :	3 3 2 6 2
1	D10	ND		24/1967	4200		7777	36.00				· Strain and the second	- 272			
2	G4	ND		1977						1	7 W. W.				湖湖湾	
2	J2	ND	72.45		建筑	维罗拉		200	142			1.266 Sec. 10.		2.76	424	47
2	J4	ND		10.00		Kering -		想到金	100	7.4			Transfer.	100		
2	J6	ND	- 1 - 77:44	100.00				100		100	(8) Print		17 B.A	-25/02	4344	
2	J8	ND		15 Table 1		White is			提集。	194		a series	9.7		13.00	
2	J10	ND			100	Sec.	7/6	£	W.	150000						
2	G2	ND	44-Y/47	12.00	*			127	34.5°		2.7%	The second second	30.00	771	建设	

Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Status	Analyzed
EPA Sample Number	BA-00061
QA Type	Not QA

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 20

Lab Sample Number Sample Type

Number of Grid Openings (chrysotile) 20

Air Category Field Prep Direct Counting Rules 10312

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 630 L Sensitivity (amphibole) 2.35E-03 s/cc Sensitivity (chrysotile) 2.35E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3·1	0.5	none

270801091-0013

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

OK OK Check OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	ď	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<≃.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00061 270801091-0013 ISO 11-13-08 D.xls

12/2/2008, 3:27 PM

FILE NAME: BA-00061 270801091-0013 ISO 11-13-08 D:xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field		
Filter Status	Analyzed		

EPA Sample Number:	BA-000	061
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	630	
Date received by lab	10/21/2	800
Lab Job Number:	270801	091
Lab Sample Number:	27080109 ⁻	1-0013
Number of grids prepared	. 5	
Prepared by	K. Barr	ies
Preparation date	10/22/2	800
EPA COC Number	L1465	56

	r						
Analyzed by	R. Pescador						
Analysis date	11/13/2008						
Prep	Direct	•					
loose material or debris in the cowl?	No	•					
Counting rules	ISO (Air or Dust)	•					
Grid storage location	2708-EMR-99, J						
Archive filter(s) storage location	Westmont						
PTC de april opporte del più de selle. Sellection de François	\$ 15 MM 6.						
F- factor	1						
QA Type	Not QA	•					

Recording Rules:

none

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	0.
0.5	0	Minimum Length (um)	1314 3273
non	ie.	Minimum Width (um)	

0.0024	Target Sensitivity
- 20	GOs required to reach target sensitivity
SAT A PT CARRES	Maximum # of GOs
50	Maximum # of Structure
20	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00061 LAB SAMPLE ID: 270801091-0013 Sample Type Air Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

14	-	1.0	0.5			100					. 7	•	***		 -		20	Se.		12	20	•	•	 8	in.	77.5			30	20.00	. **	5.5	^ '	7.7	20	-	٠.	÷.	. 76	10			2.5	8.7		18		70
1		2.1	~~		27		٠.	21	m	•	EŤ.	33	11	t		_	100	-	n	Ω	•		f.	199	•	•	\mathbf{a}	tc		~1			0	m	4.	. f .	-6	1		tr		21	n	•	to		٠.	€ 1
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Grid	Grid	Structure	No. of S	tructures		ions (a)	Identification		Mineral C	lass (b)				s, blank		Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND	2 3 2	With the same	4.5	111 T (4)	多数数 对连	300 Y	Larry S	72.5	144	4. Cal (114)	April 10 April 1	100	1 1 144	27.00
1	J3	ND			14.00	4.2			100	22.00		12.00	1436.2			1000
1	J5	ND					200	1		117.00	196		70040			
1	J7	ND			10.374		W. Carrier S.	4.3.63			# F T	**************************************	SPEC :	** **	100	4.7
1	J9	ND				* * * * * * * * * * * * * * * * * * * *		-525- 23	****	75,725	146					
1	G2	ND		**			Best Sale			17-17	200					
1	G4	ND				1 1 1 1		11.2		110.53	\$ 364 JA		(C. C. C			2
1	G6	ND	44,200			Profession and Profes	Sept. To the Section	100			W.5	4.75			411	
1	G8	ND				7 K	有成 为分别的	347.200	4	64.5 (0)	18 Th.					44.6
1	G10	ND				No.	And the second	12011440			10.55	46.0044	13.		and the	100
2	G1	ND			2100	Sec. 19	1.239 - 13	40000	366	78.7	B. W. S.		The state	100	Filter.	
2	G3	ND		100	1:17(1)(3)	\$10,78. S	412 Tab			18.74	14.7 11		1000	7.7	77.343	
2	G5	ND						40.02		1400		TO CONTRACT OF	3.527			1.34
2	G7	ND			0.000		Secretary and	2.38	140.00	1000	Sea of		34-27			
2	G9	ND	4.74				No.	170000	0.50	240930	Grant of		Server.			
2	F2	ND								11.1	7 Trans		Wall to	1	\$40.00	
2	F4	ND	100		1243	7-78-17	14000	4.00	984				1	J. 18	付付事	1.0
2	F6	ND		transation st	14.25		area transfer		100000	1100	1200		State of the state of		and a Second	
2	F8	ND			Spirit Pag	第84条 法	ethics 1 to 1 or 1	35000	100	1000	200					3.00
2	F10	ND	20.30				Act of the	100								

BA-00062_270801091-0014_ISO_11-13 8EIM

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

QA Type

Analyzed BA-00062 Not QA

Lab Sample Number

EPA Sample Number

Sample Type Air Category Field Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 21 Number of Grid Openings (chrysotile) 21

Grid opening area Volume (L) or Area (cm2)

0.0130 mm2 602 L 2.34E-03 s/cc

Sensitivity (amphibole) Sensitivity (chrysotile) 2.34E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801091-0014

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	o	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

OK Check OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00062_270801091-0014_ISO_11-13-08_D.xls

12/2/2008, 3:29 PM

FILE NAME: BA-00062_270801091-0014_ISO_11-13-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27		
Instrument	JEOL 100 (49)	CX II		
Voltage (KV)	100 k	٧		
Magnification	19,000	Х		
Grid opening area (mm2)	0.013	0		
Scale: 1L=	1.000			
Scale: 1D =	1,000)		
Primary filter area (mm2)	385.0)		
Secondary Filter Area (mm2)	360,0)		
Category	Field	•		
Filter Status	Analyzed	•		

EPA Sample Number:	BA-000	62	
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	602		
Date received by lab	10/21/2	800	
Lab Job Number:	270801091		
Lab Sample Number:	270801091-0014		
Number of grids prepared	5		
Prepared by	K. Barr	ies	
Preparation date	10/22/2	800	
EPA COC Number	L14656		

Analyzed by	R. Pescador			
Analysis date	11/13/2008			
Prep	Direct V			
ir sampre type – air, is mere loose material or debris in the cowl?	No 🔻			
Counting rules	ISO (Air or Dust)			
Grid storage location	2708-EMR-99, K			
Archive filter(s) storage location	Westmont			
Pas Japaner († 1865) 1806 – Stationary	o de mado			
F- factor	1			
QA Type	Not QA			

Recording Rules:

Stopping Rules:

110001	WILL.	1 Tuices	Otopping i	(MICO)
≥ 3:1	•	Minimum Aspect Ratio	4,002.	Target Sensitivity
0.5	0	Minimum Length (um)	1- 21	GOs required to reach target sensitivity
nor	ne .	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	21	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

 EPA SAMPLE ID:
 BA-00062
 Sample T

 LAB SAMPLE ID:
 270801091-0014
 Count Ru

Sample Type Air.
Count Rule 10312

Prep Direct

QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/14/2008 QA by: K. Lusher QA date: 12/2/2008

arge														

rarget :	sensitivity	Reacheu-	Combiere	current), men sio	Pagasas sign	Carly for Microsoft Seattle	?								
Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification	Mineral Class (b)					1 = ye	s, blank :	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width	racini noation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	12	ND ·	Mark Comme	- (/ (CF95))	677578	数据内容		Marrie 1	3,400	学35域;	Section (Section)	1945 W V 4 14 1	12-16-2	200	S. Walter	1961
1	14	ND		100	4000			17.35	2.75	denta.	2.5		100	27.20	7,50%	
1	16	ND		4.7	100					4.3	16.27			11.04	414	
1	18	ND		5 11 11	190 C 1974		1 7 Page		7.0			Provide the State of State of				
1	110	ND		- 020	300			400			4270			- 3.50	<i>3</i>	
1	G2	ND	为此。	7.77				enalité		W	tive e		Salt Company	6 (1)		
1	G4	ND					76.00			和 美力	象的数		1000	-17129	486	0.00
1	G6	ND		150				3000	\$77.50				(1) (1) (a)			40.00
1	G8	ND	494		4-12-6					4.0		777.34 7.00	2/3/2	100		
1	G10	ND	135 10638	575 C	中国医证		10 31 70 40	AND THE			E ALL DES		10.000	7-5-27 8	100	
2	H1	ND	1,74		100						SET SE		1000	13.34		100
2	H3	ND	100 Harley			A lieu i	100	14 C	100	474	35,34	And the second of the second of		52,323		
2	H5	ND	32.0000	2 (0)	A		(P.)				100	Treatment and the	4.15	17 (2.3)	CHANG.	
2	H7	ND		1.70			To the second	334		AM.	3-10,00		3 P. C. S.	4 X X X		P. P. C.
2	H9	ND	/#: // (Fig	77.77	Carlotter.		14.0° 17.7 (10.0 ₂ %)			45	F-12		A	77-14-2		4345
2	G2	ND	100		100 A			630			-14		1000	and an early	(A)(4)(3)	1000
2	G4	ND			100						1000		27.10.00	200		
2	G6	ND	N	240.64	F 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100	(F) (F)	Fig.		2.5			241		
2	G8	ND	100		3	Mean series		Minut 3	40.44	parties.	23/3/2012		144.44	356,584	A CONTRACTOR	Programme and the second
2	G10	ND	4 7 7 7	100	1000	ge	7.00	1000		MSCC.		PARTITION OF	76 77 43	11.00	100	300 Carteria
2	E1	ND					T and									

SAMPLE ID

Status

Analyzed

Air

Blank

Direct 10312

0.5

EPA Sample Number LB QA Type 270801091 Lab Sample Number

Sample Type Category

Recording

Rules:

Prep Counting Rules **PARAMETERS**

Effective filter area Indirect factor

Sensitivity (chrysotile)

1.00E+00 Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile) Grid opening area

10 0.0130 mm2

Volume (L) or Area (cm2) Sensitivity (amphibole)

0 L Blank s/cc Blank s/cc

385.0 mm2

10

Min length (um) Min width (um)

none

Stopping Rules:

Target S Max GOs Max N 10 50

≥ 3:1 COUNTS (based on countable structures only)

Min. AR

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	ОК	OK	ОК		

OK Check OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

270801091 ISO 11-13-08 DLB.xis

270801091 ISO 11-13-08 DLB.xls FILE NAME:

FILE TYPE: Original

Recording Rules:

Stopping Rules:

≥ 3:1	▼ Mi	nimum Aspect Ratio		Target Sensitivity		
0.50	Mi	nimum Length (um)		GOs required to reach target sensitivity		
none	Mi	nimum Width (um)	10	Maximum # of GOs		
			50	Maximum # of Structure		
			10	Estimated # of GOs		

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX II (49)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Blank 🔻			
Filter Status	Analyzed 🔻			

EPA Sample Number:		
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)		
Date received by lab		
Lab Job Number:	270801	091
Lab Sample Number:	270801	091
Number of grids prepared	3	
Prepared by	K. Barr	nes
Preparation date	10/22/2	008
EPA COC Number	L1465	66

Analyzed by	R. Pescador			
Analysis date	11/13/2008			
Prep	Direct	•		
If sample type – all, is there loose material or debris in the cowl?	No	~		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-99, L			
Archive filter(s) storage location	Westmon	t		
in a financiarine mi nanciari Le com de Franço Beres	- interior			
F- factor	1			
QA Type	Lab Blank	•		

F-factor Calculation: Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction: V

 EPA SAMPLE ID:
 0
 Sample Type | Air | Prep | Direct
 Prep | Direct
 OK - No errors found

 LAB SAMPLE ID:
 270801091
 Count Rule | 10312 | QA Type | LB
 OK - No errors found

 Data Entry by:
 L. Ramowski
 QA by:
 K. Lusher

 Data Entry date:
 11/14/2008
 QA date:
 12/2/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank :	= no	Fract. GO
Ond	Opening	Type	Primary	Total	Length	Width	lucillication	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND	4 G 3 G 1	Mary Land Service	- A : 100 a 200	24 (24)	24 PE	7. 4.27	THE PERSON	71.772.70			71475	6.00	95 W	111111
1	J3	ND	10.00							100	Parts.		93.29		4.85°	
1	J5	ND			4 7 7		6.46	1.14	1.00	7.12	通声	4.39	77.33			
1	J7	ND	14 % Epr		4.6	A Action	Market	2.45.4.		142 %	54 P	* * *** *** ** *** ***	Arms	100		134
1	J9	ND	3044675	48.8	4.045		RESERVE FOR		10.27	183	新建设	1977			116	994 (30000
2	l1	ND	40.2500	10.15.5			建始的	400000		74	6 W 34			100	1	
2	13	ND					*	W 34	1.00	23.00	1,772	Control Control	基础			200 200
2	15	ND	Water History		100		Market St.	30	34.2	1.44	4946	1000		46.70	731a :	100
2	17	ND					建	类别类的。	CON.	4300				Address of	400,55	- 10
2	19	ND					200 m	254	4-654	01/2	4.77		1144			14 75 14 15 16 1

SAMPLE ID

Status

Analyzed BA-00033

EPA Sample Number VA QA Type

Lab Sample Number Sample Type

270801091-0008 Air

Category Field Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area Indirect factor

385.0 mm2 1.00E+00 39

Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile) Grid opening area

39 0.0130 mm2

Volume (L) or Area (cm2) 658 L Sensitivity (amphibole) 1.15E-03 s/cc Sensitivity (chrysotile) 1.15E-03 s/cc

Recording Rules:

Min length (um) Min width (um) Min. AR ≥ 3:1 0.5 none

Stopping Rules:

Max GOs Target S Max N 0.0024 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		i
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total OK 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
e	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00033_270801091-0008_ISO_12-01-08_DVA.xls

FILE NAME: BA-00033 270801091-0008 ISO 12-01-08 DVA.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27			
Instrument	JEOL 100 (27-2	-,			
Voltage (KV) 100 kV					
Magnification	19,000	Х			
Grid opening area (mm2) 0.0130					
Scale: 1L =	1.000)			
Scale: 1D =	1.000)			
Primary filter area (mm2)	385.0)			
Secondary Filter Area (mm2)	360.0				
Category	Field				
Filter Status	Analyzed	•			

COMMENTS

EPA Sample Number:	BA-000	33
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	658	
Date received by lab	10/21/2	800
Lab Job Number:	270801	091
Lab Sample Number:	27080109	1-0008
Number of grids prepared	5	
Prepared by	K, Ban	es
Preparation date	10/22/2	800
EPA COC Number	L1465	56

Analyzed by	E.Wyatt-Pescador		
Analysis date	12/1/2008	3	
Prep	Direct	•	
ir sample type – air, is there loose material or debris in the cowl?	No	~	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-98	9, E	
Archive filter(s) storage location	Westmon	t	
Toga de la complé eve de la cara SEB de la calenda de la calenda	ការ សុវន សម្លាំកំពែល		
F- factor	1		
QA Type	Verified Analysis	•	

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
non	e	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
m r			19	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

BA-00033 EPA SAMPLE ID: LAB SAMPLE ID: 270801091-0008

Sample Type Air Count Rule 10312

Prep Direct QA Type VA

ERROR CHECK OK - No errors found

Data Entry by:

L. Ramowski

K. Lusher QA by: 12/2/2008

Data Entry date: 12/2/2008 QA date:

Target S				current G				·				T	7			
Grid	Grid	Structure		tructures	Dimens		Identification		Mineral C		,			s, blank		Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	The Total	i in the second	120	* P. W. C.		\$11.50 p. 1	15 T.		Art of the		21.75		等数数	
1	J4	ND	3.44 F. F.	e e e e e	10000					Ži ta j		11-456	16.64	3,000	36 to 480	100
11	J6	ND	84.5	1			44.1	New Control	27.76	\$470 S	1.4		100	44.0	79.3	
1	J8	ND		and the second		76 7 K = 1		3,4,54	7.00	9.5	12.00		We lake	esta es		
1	J10	ND	1437.75	3-32	40 346		2.9		X.	2023	. *** (. ***)			44.4	44.68	
1	H2	ND	1-4019				119			2000	Carrier Control		100 m			
11	H4	ND						My to	M. Free	\$14.0 mm 3	184,297		1414-201	100		14. AND 15. IN
1	H6	ND	description of		1000		100	¥ 55 0	100		364 37			42.44	100	
11	H8	ND	392 32	-200				Tree where		10,010			1000	1.00	September 1	
1	H10	ND	* 4.50				- かけまぬ	163407		1	3440			- 43-74		A Property
1	G1	ND	171300		1000		1		GA WAR	4.5	3.134	All the French Control of the Contro	7.6.177	34		A
1	G3	ND	42.0	100	Alleria programme		100	100	1978	27474	10000					
11	G5	ND		100000					Same of		a de la		100			
11	G7	ND	1000	10000	A CARLO			1464	A second	1987	17.7	CF Fair Takes		ride / to	Mark 1	7.7
1	G9	ND		- 4 4 4	A7.00		100	100	2000	1647. 4	2022	77 A W. 14 A 17 A 17		10.00	2.84	**************************************
11	F2	ND				7.		E Francis	100				64 W. W.			
1	F4	ND			367717		100	27.547.63		7.7	1000		1.7	100		200
1	F6	ND		1.00	Contract Section	and the	- 10 10 22	137	See Con-		44.77	24 - 24 - 34 - 34	17.24	10.0		All states
1	F8	ND		* 344	97763				4.5	25.50	1984		- 6.	100	March 1	
1	F10	ND			164 A. Service		7.00	A. 1. 16.	770 Julya		100	TO THE PERSON NAMED IN COLUMN TO SERVICE AND ADDRESS OF THE PERSON NAMED ADDRESS OF THE PERSON NAMED IN COLUMN TO SERVICE AND ADDRESS OF T				
11	E1	ND	***	it sugar				1 and		1000			1000	100		100
1	E3	ND	5.2				200		*	25.7						
1	E5	ND	4 2 3	100	100			1000	(A)	25192.160	31			- 10	4,4465	100
11	E7	ND			10000			100000	4.5	u. Taliar	100			70.54		
11	E9	ND	12.11 S. 11 S.		35-78. 35.	Arrian II			10 to 12			rest constitution of the	1	2.5		10 mm 1 mm
2	J2	ND	31.76	**********	0.000		7.045646	and the second	2000	100	1.00					
2	J4	ND	a manager			100	1000									
2	J6	ND		49.04				3003204	one con	2.75					Paritie	
2	J8	ND			4414			100000000		100						6-16-16-16-16-16-16-16-16-16-16-16-16-16
2	J10	ND	200		200	9 440000								100		78.00
2	H2	ND			100	ere ere		7.00 Sec. 19.00	1		13634			7.3		A Report State
2	H4	ND			Apple 64		2.5	19024	are Sur A	444	100		A. 12. A. 1	100		de la propieta
2	H6	ND			100 100,000	Marie III		Mile than	e again	1000	1.50					
2	H8	ND	A. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	- El Sichter	148443		7.5			1000	334					1 4 10 2
22	H10	ND	4 7 V 1 S M	100	100		1,500		Tree les					10.07	100	

2	G1	ND	
2	G3	ND	
2	G5	ND	
2	G7	ND	

Versio

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count -- ISO 10312**

SAMPLE ID

Status

Analyzed BA-00040

RD

EPA Sample Number QA Type

Lab Sample Number

Sample Type

Prep Counting Rules

Category

270801091-0009 Air

Field Direct 10312 **PARAMETERS**

Effective filter area Indirect factor

1.00E+00 Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile) Grid opening area

Volume (L) or Area (cm2) Sensitivity (amphibole)

Sensitivity (chrysotile)

13 13 0.0130 mm2

385.0 mm2

780 L

2.92E-03 s/cc

2.92E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

OK

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	ОК	OK	OK	_	

Check OK Grand total

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio	
LA = Libby-type amphibole	а			<5	
OA = Other amphibole	b	<.5		>= 5	
C = Chrysotile	С		>.5	>= 5	
	d	>=.5 to < 5	<=.5	>= 5	
	е	5 to 10	<=.5	>= 5	
	f	>10	<=.5	>= 5	

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00040 270801091-0009 ISO 01-30-09 DRD.xls

FILE NAME: BA-00040 270801091-0009 ISO 01-30-09 DRD.xls

FILE TYPE:: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27	
Instrument	JEOL 100 CX II (27-02)	
Voltage (KV)	100 kV	
Magnification	19,000 X	
Grid opening area (mm2)	0.0130	
Scale: 1L =	1.000	
Scale: 1D =	1.000	
Primary filter area (mm2)	385.0	
Secondary Filter Area (mm2)	360.0	
Category	Field 🔻	
Filter Status	Analyzed 🔻	

EPA Sample Number:	BA-00040
Sample Type	Air 🔻
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	780
Date received by lab	10/21/2008
Lab Job Number:	270801091
Lab Sample Number:	270801091-0009
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/2008
EPA COC Number	L14656

Analyzed by	R. Mahoney		
Analysis date	1/30/2009		
Prep	Direct T	•	
ir sampre type = air, is there loose material or debris in the cowl?	No 🔻	,	
Counting rules	ISO (Air or Dust)	,	
Grid storage location	2708-EMR-99, F		
Archive filter(s) storage location	Westmont		
F- factor	1		
QA Type	Recount Different	,	

Recording Rules:

Stopping Rules:

≥ 3:1 ▼	Minimum Aspect Ratio Minimum Length (um)	46	Target Sensitivity GOs required to reach target sensitivity
none	Minimum Width (um)		Maximum # of GOs
	-	50	Maximum # of Structure
F-factor C	'alculation:	16	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

Grid 1 openings J7 and H10 plus Grid 2 opening F3 - blown

EPA SAMPLE ID: BA-00040

LAB SAMPLE ID: 270801091-0009

Sample Type Air
Count Rule 10312

Prep Direct
QA Type RD

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 1/30/2009

QA by: QA date: K. Lusher 2/3/2009

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification	*****	Mineral Class (b)		Mineral Class (b)			1 = ye	1 = yes, blank = no		Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	lucitilication	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.	
1	J1	ND															
1	J3	ND															
1	J5	ND															
1	J9	ND															
1	H2	ND															
1	H4	ND													e proposed and a second		
1	H6	ND															
1	H8	ND													1100		
2	F1	ND														1.218	
2	F5	ND															
2	F7	ND				10.00							100				
2	F9	ND									100						
2	E8	ND							100	K-2864							

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0,8

Structure

No. of Structures

EPA Sample Number:	BA-00003
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	933
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0001
Number of grids prepared	5
Prepared by	K. Bames
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/ 12/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, R
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:				
Minimum Aspect Ratio (circle one):				
none	3	≥ 5:1		
Minimum Length	(um):	0.5		
Minimum Width (um):	None		

Stopping Rules:	14N = 2024
Target Sensitivity:	alrelat 0.0024
Max # of GOs:	14 -00-
Target # of Structu	ires: 50

F-factor Calculation:

Fract.

Indirect Prep Inputs
Fraction of primary filter used for indirect prep or ashing (For dust and dustfall, enter 1.0) First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

Grid	Grid Opening	Structure	1.0.0.				Identification			(Sketch/ Comments	,	, , , , , , , , , , , , , , , , , , , ,		GO
Olic	Ond Opening	Туре	Primary	Total	Length	Width	Idominioanon	LA	OA	С	NAM	Chelory Continents	Sketch	Photo	EDS	Chrys.
1	J2	ND														
1	J4	ND														
	16	ND														
	18	ND												_		
	J10	ND														
	II	ND														
	13	ND														
	I.S	ND														
	17	ND														
4	ID	ND														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

C = Chrysotile

Mineral Class (see below)

NAM = Non-asbestos material

1 = yes, blank = no

Grid opening traverse direction (circle one): H Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00003
 QA TYPE
 LAB JOB NUMBER
 270801091

 LAB SAMPLE NO.
 270801091-0001
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-97, R

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
Ond	Opening	Type	Primary	Total	Length	Width	Identinodatori	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
į	H	ND							***************************************						w.a.e.a	
	+14+	No														
	46	No														
	48	ND														
	+110	40														
	GI	NO														
	G3	No														
	G5-	NO														
	G7	No												,		
	G9	NP	·													
	F2	ND								A to commence of the commence						
	F4	Vo														
	P6	ND														
	Fg	NO														
+	F10	No														

LAB NAME EMSL27

LAB SAMPLE NO. 270801091-0001

EPA SAMPLE NO. BA-00003
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER <u>270801091</u>

GRID STORAGE LOC. <u>2708-EMR-97</u>, R

0.11	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class			1 = v	es, blank	= no	Fract.
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С_	NAM	Sketch/Comments	Sketch			Chrys.
2	J2	ND														
	74	ND														
	16	ND														
	18	ND							_							
	110	ND														
	II	ND														
	I 3	ND														
	IS-	ND														
	I 7	ND														
	エク	ND														
	H2	NB														
	+4	ND														
	46	NO														
7	H8	ND														
			RSF 11/1	2/08												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	38J 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00004
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	991
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0002
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/ <i>[]</i> 2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
if sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, S
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interiab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Recording Rules:											
Minimum Aspect Ratio (circle one):											
none ((3:1)	≥ 5:1									
Minimum Length (u	ım):	0.5									
Minimum Width (ur	n):	None									

Stopping Rules:	
Target Sensitivity:	Mr2/01 0.0024
Max # of GOs:	13 ·==
Target # of Structur	es: 50

F-factor Calculation:

Indirect Prep Inputs
Fraction of primary filter used for Indirect prep or ashing

[For dust and dustfail, enter 1.0]
First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of Str	ructures	Dimer	nsions	Identification	Mir	eral Class	(see belov	w)	Sketch/ Comments	1 = ye	s, blank	≃ no	Fract. GO
9:10	Gild Opering	Туре	Primary	Total	Length	Width	identification)	LA	OA	C	NAM	GREICH COMMENTS	Sketch	Photo	EDS	Chrys.
ſ	JI	ND											_			
	J3	ND														
	VJ	an														
	J7	No														
	19	ND								_					_	
	12	NO														
	IY	29														
	J.	NO		,												
	48	NO														
4	IID	ND														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

H Horizo

Are prepped grids acceptable for analysis? (circle one) If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00004

 LAB SAMPLE NO.
 270801091-0002
 SAMPLE TYPE
 A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-97, S

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification	L	Minera	Class	·		1 = y	es, blank	= no	Fract.
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С_	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
	<u> H1</u>	ND														
	H3	ND										-				
	H5	ND														
	H7	ND														
	49	NO														
	હ્ર	ND														
	G4	ND														
	66	NO														
	G8	NO														
	GIO	ND														
•	D2	ND														
	54	ND														
	06	ND														
	08	NO														
1	DIB	NO														

LAB NAME EMSL27 LAB SAMPLE NO. 270801091-0002

EPA SAMPLE NO. SAMPLE TYPE

BA-00004 Α

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-97, S

270801091

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Mineral	Class			1 = y	es, blank	= no	Fract. GO
Gria	Opening	Туре	Primary	Total	Length	Width	idenuication	LA	OA_	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	T2	ND											****		AAAAATT,	
	JY	NO														
	I6	ND														
	IS	No														
	±10	ND														
	62	NO														
	GH	ND														
	G6	ND														
	G8	ND														
	Glo	ND														
	EZ	NP														
	εψ	NO														
	2,3	NO														
1	83	ND														
		P	19 n/2/0													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	6.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	325
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

No. of Structures

EPA Sample Number:	BA-00013
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	977
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0003
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/ 12/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, T
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interiab)	Not QA
reason make the same of the sa	

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:		
Minimum Aspect Ratio (circ	le one):	
none 23:1	≥ 5:1	
Minimum Length (um):	0.5	
Minimum Width (um):	None	
_		

Stopping Rules:	112401 0.0024					
Target Sensitivity:	112401 0.0024					
Max # of GOs:	13 .99-					
Target # of Structure	es: 50					

Grid	Grid Opening	Siluciale			<u>i</u>		- Identification					Sketch/ Comments				GO	F-18
U GIA	Orid Operating	Type	Primary	Total	Length	Width	ide illiouter	LA	OA	С	NAM	OREIGI COMMENTE	Sketch	Photo	EDS	Chrys.	Inc
1	JZ	ND															
i	~4	ND															
	46	ND															
	18	ND															Ing
	110	ND															
	II	ND	_														
	I3	ND										_					

3.	factor	Calculation:

ndirect Prep Inputs
Fraction of primary filter used for Indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (ml.) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (ml.)
	Volume applied to secondary filter (ml.) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)
	Inputs for S

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

I)

ND

NO

No

OA = Other (non-Libby type) amphibole

Dimensions

C = Chrysotile

Mineral Class (see below)

NAM = Non-asbestos material

1 = yes, blank = no

Grid opening traverse direction (circle one): H Horizontal



Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:

Fract.



 LAB NAME
 EMSL27

 LAB SAMPLE NO.
 270801091-0003

EPA SAMPLE NO. BA-00013
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-97, T

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	l Class			1 = v	es, blank	= no	Fract.
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA_	OA	С	NAM	Sketch/Comments	Sketch		EDS	GO Chrys.
ı	GZ	ND														
	GY	ND														
	G6_	ND		_												
	G8	NO														
	GIØ	ND							-							
	FI	NO												,		
	F3	NO														
	FS	NO														
	F7	ND														
	F9	ND														
	E2_	ND														
	E4	ND														
	٤6	ND														
	E8	Np														
	EIB	NO									'					

LAB NAME EMSL27 LAB SAMPLE NO. 270801091-0003

EPA SAMPLE NO. SAMPLE TYPE

BA-00013 Α

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-97, T

270801091

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = y	es, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch		EDS	Chrys.
r	II	ND														
	I3	ND														
	IS	<i>N</i> D														
	I 7	NO														
	I)	ND														
	Hz	ND			-											
	44	NO														
	HB	ND														
	H8	NO														
	410	ND														
	GI	NO														
	G3	ND														
	er_	NO									,					
م ب	G7	No														
	****		LAP 14	12/08												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voitage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	. 1
Primary filter area (mm2)	3 85
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00014
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	942
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0004
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

R. Pescador
11/12/2008
D
No
ISO
2708-EMR-99, A
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Recording Rule	es:	
Minimum Aspe	ct Ratio (circl	e one):
none	≥ 3:1	≥ 5:1
Minimum Leng	th (um):	0.5
Minimum Width	n (um):	None
	-	

S	opping Rules:	was a source
Ta	arget Sensitivity:	alulor -0.0004
М	ax # of GOs;	iy - -29-
Ta	arget # of Structure	es: 50

F-factor Calculation:

Indire	ot Prep Inputs
	Fraction of primary filter used for indirect prep or ashing
	[For dust and dustfell, enter 1.0]
	First resuspension volume or rinsa volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

<u> </u>	puts for S	Serial Dilutions
		Second resuspension volume (mL)
		Volume applied to secondary filter (mL) or used for serial dilution
		Third resuspension volume (mL)
		Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of Str	ructures	Dimer	nsions	Identification	Mir	eral Class	(see belo	w)	Sketch/ Comments	1 = ye	s, blank	= no	Fract. GO
512	Ond Opening	Type	Primary	Total	Length	Width	IGET LINGALION	LA	OA	C	NAM	GREWII COMMENS	Sketch	Photo	EDS	Chrys.
	JI	ND														
ì	JB	ND														
	u	ND														
	J7	ND						_								
	J9	110									,					
	IZ	NO											V			
	I¥	29														
-	J,	NO														
Spanner of State S	I8	20														
1	IID	NP														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibale

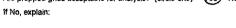
C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): H Horizontal



Are prepped grids acceptable for analysis? (circle one) (es) No



LAB NAME EMSL27 270801091-0004 LAB SAMPLE NO.

EPA SAMPLE NO. SAMPLE TYPE

BA-00014 Α

QA TYPE Not QA

LAB JOB NUMBER

270801091 GRID STORAGE LOC. 2708-EMR-99, A

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class			1 = y	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С_	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
	62	ND														
1	64	NO													_	
	66	No														
	G18	ND							L							
	G10	NO														
	# 1	NO														
	F3	ND														
	Ts .	ND									,					
	F7	ND														
	F9	NO														
	D2	NO														
	D4	NO														
	06	No														
	DB	No														
-	DIO	NO														

LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. 270801091-0004

EPA SAMPLE NO. BA-00014
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091
GRID STORAGE LOC. 2708-EMR-99, A

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width	i dollanodio:	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	I6	NP														
	Ī8	ND														
	TIO	ND														
	#7	ND														
	H9_	ND		,				_								
	GS	ND														
	G8	No									•					
	GIO	NO						!								
	FI	1/0														
	F3	ND														
	FJ	No														
	F7	NO														
	F9	NO														
+	E10	No														
			RAF 4/1	(as)												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX il (49)
Voitage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L ≈	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

No. of Structures

Total

Primary

EPA Sample Number:	BA-00023
Sample Type (A=Air, D=Dust, DF = Dustfali):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	960
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0005
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Identification

LA

R. Pescador
11/1/2008
D
No
ISO
2708-EMR-99, B
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:							
Minimum Aspect Ratio (circle one):							
none 232	≥ 5:1						
Minimum Length (um):	0.5						
Minimum Width (um):	None						

Stopping Rules:	
Target Sensitivity:	pulf 0.0024
Max # of GOs:	13-80-
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

irect Prep Inputs
Fraction of primary filter used for indirect prep or ashing
[For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (ml.) or used for serial dilution

Inputs for S	Serial Dilutions
	Second resuspension volume (mL)
·	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ash	ning of Secondary Filter
	Fraction of secondary filter used fo ashing

LA = Libby-type amphibole

Grid

Grid Opening

GI

G3GS

G7

FU

TC

OA = Other (non-Libby type) amphibole

Dimensions

Length Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

Vertical

Are prepped gride acceptable for analysis? (circle one) if No, explain:



LAB NAME EMSL27

LAB SAMPLE NO. 270801091-0005

EPA SAMPLE NO. BA-00023
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-99, B

_	Grid	Structure	No. of Str		Dima	nsions		Identification Mineral Class					4 \	Fract.		
Grid	Opening	Type	Primary	Total	Length	Width	Identification	cation LA				Sketch/Comments	Sketch	es, blank Photo	= no EDS	GO Chrys.
1	٤١	ND	,						OA							
	દરૂ	NO													,	
	ES	NP									*					
	٤ ٦	W0				111111111111111111111111111111111111111				***************************************						
	E 9	ND			`				<u></u>							
	DZ	1/0														
	04	ND														
	06	NO														
	p8	ND											***************************************			
	DIØ	NO													····	
	CI_	NO													EVERANT	
	C3	ND										444000000000000000000000000000000000000				
	c5	No														
	C7	ND													**********	
\	cg	NO														-

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00023
 QA TYPE
 LAB JOB NUMBER
 270801091

 LAB SAMPLE NO.
 270801091-0005
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-99, B

Grid	Grid	Structure			Dimensions		Identification		Minera	Class			1 = yes, blank = no			Fract. GO
Ona	Opening	Туре	Primary	Total	Length	Width	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	UI.	ND														
	J 3	NO														
	72	NO														
	J7	ND														
	19	ND														
	J2	1/0							and the second s							
	14	ND														
	IL	N0														
	<u> 18</u>	NO							***************************************							
	TIO	NO														
	H1 .	ND														
	H3	ND														
	45	No														
1	H7	NO														
	The state of the s	-	UP aliz	or												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)_
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D ≃	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00024
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	953
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0006
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

	R. Pescador
	11//2/2008
direct, IA=Indirec	
here loose mater Yes, No)	al No
	ISO
	2708-EMR-99, C
location	Westmont
t Same, Recount Analysis, Interial)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rule	<u>es:</u>		
Minimum Aspe	ct Ratio (circle	e one):	
none	(23:1)	≥ 5:1	
Minimum Leng	th (um):	0.5	
Minimum Widt	h (um):	None	

Stopping Rules:		, .	
Target Sensitivity:	पुरुष्ट्र ११ हिस्सी	-	0024 10001
Max # of GOs:		13	20-
Target # of Structur	es;		50

F-factor Calculation:

Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for S	Inputs for Serial Dilutions							
	Second resuspension volume (mL)							
	Volume applied to secondary filter (mL) or used for serial dilution							
	Third resuspension volume (mL)							
	Volume applied to secondary filter (mL)							

Input for Ashing of Secondary Filter Fraction of secondary filter used for

Grid	Grid Opening	Structure	No. of St	No. of Structures Dimensions		Identification	Mir	eral Class	(see belo	w)	Sketch/ Comments	1 = ye	s, blank	= no	Fract. GO	
- Ond	Ond Opening	Туре	Primary	Total	Length	Width	(Continuation)	LA	OA	С	NAM	Oracion Constitution	Sketch	Photo	EDS	Chrys.
	Jz	ND														
	14	NO						404								
	16	ND														
	J8	No			-											
	011	ND														
	II	ND														
	I3	ND														
	II	ND														
	17	No										,				
-	すり	No														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): H Horizontal



(Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:

LAB NAME <u>EMSL27</u>

LAB SAMPLE NO. 270801091-0006

EPA SAMPLE NO. BA-00024
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-99, C

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = yes, blank = no			Fract. GO
	Opening	Туре	Primary	Total	Length	Width_		LA	OA_	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
	H2	ND		11.11												
İ	14	ND		111												
	116	ND														
	tt3	ND														
	AID	ND														
	GI	NO														
	G3	No														
	GS	No														
	G7	NO														
	G9	NO														
	F2	ND														
	F 华	NO														
	Fs	No														
	FĢ	NO														
47	F10	ND														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00024
 QA TYPE
 LAB JOB NUMBER
 270801091

 LAB SAMPLE NO.
 270801091-0006
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-99, C

Grid	Grid	Structure	No. of Str	uctures	Dime	ns ions	Identification		Minera	Class			1 = y	Fract.		
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	JI	ND														
	13	ND	, and the same and del>													
	4	No													~~~	
	J7	Np														
	J9	NO													~~~	
	12	N0														
	J4	No														
	16	NP													*************	
	IB	ND													***************************************	
	I10	NO														
	41	NO														
	H3	NP														-
	H5	ND														
+	H7	ND		-												
The second second		R	10/11/12/04							-						

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00032
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	780
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0007
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/12/2008
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, D
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules	<u>:</u>	
Minimum Aspec	t Ratio (circle	e one):
none	≥3:1)	≥ 5:1
Minimum Length	n (um):	0.5
Minimum Width	(um):	None
	_	

Stopping Rules:	
Target Sensitivity:	11/28/4 0,0024
Max # of GOs:	K +++
Target # of Structure	s: 50

F-factor Calculation:

mune	ct Prep Inputs Fraction of primary filter used for
	indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
-	Volume applied to secondary filter

inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

Grid G	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mir	eral Class	(see belo	w)	Sketch/ Comments	1 = ye	s, blank	= no	Fract.
		Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketchi Comments	Sketch	Photo	EDS	Chrys.
1	12	dh														
	4	2														
	16	ND														
	78	ND														
	JID	ND														
	H2	ND														
	44	ND														
	H6	NO														
	HB	NO														
1	HID	NP						,								

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) No if No, explain:

LAB NAME EMSL27 270801091-0007 LAB SAMPLE NO.

EPA SAMPLE NO.

SAMPLE TYPE

BA-00032

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-99, D

270801091

	Grid	Structure	No. of Str	ucture.	Dime	nsions			Minera	l Class			1 = 1/4	es, blank	= 200	Fract.
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Sketch/Comments	Sketch		EDS	GO Chrys.
1	GI	ND														
Ĭ.	G3	ND				******									,	
	GT	ND														
	G7	No														
	G9_	No		v											10000000	
	FZ	ND														
	FY	ND									-					
	F6	NO													,	
	F8	Np														
	FID	NO				-										
	٤١	No														
	<i>E</i> 3	No														
	ξ ₁ ~	NO														
	E7	NO														
1	89	NO														

LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. 270801091-0007

EPA SAMPLE NO. BA-00032
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-99, D

	1				l <u>.</u> .											Fract.
Grid	Grid Opening	Structure Type	No. of Str			nsions	Identification	1.4	Minera		T.,,,,,			es, blank		GO Chrys.
	1	<u> </u>	Primary	Total	Length	Width_		LA	OA _	С	NAM	Sketch/Comments	Sketch	Photo	EDS	0111 90.
2	ゴリ	ND			_							***************************************				
	EI	NP														
	35	No														
	17	ND														
	I9	NO														
	H2	NO				-										
	44	NO							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
	A6	NO														
	H8	NO					•		, .							
	H10	ND														
	GI	NP														
	G3	NO														
	GUT	No		4444												
-	G7	No							.,,,,,,,							
		A STATE OF THE PERSON STAT	RAGI	12/08												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	. 1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

Grid Opening

J2 14

16

SIV 42

44

Grid

No. of Structures

Primary

Total

	T
EPA Sample Number:	BA-00033
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	658
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0008
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	2 2
	R. Pescador
Analysis date	11/12/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, E
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconcillation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:					
Minimum Aspect Ratio (circle one):					
none	3:1)	≥ 5:1			
Minimum Lengt	h (um):	0.5			
Minimum Width	None				
	-				

Stopping Rules:	
Target Sensitivity:	1128/08 0.0001
Max # of GOs:	19 30
Target # of Structu	ıres: 50

Fract.

GO

Chrys.

Indire	ot Prep Inputs
I I direct	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsati volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for 8	Serial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

	b	Alb	6
LA = L	.ibbv-	type am	phibole

OA = Other (non-Libby type) amphibole

Dimensions

Length | Width

C = Chrysotile

Mineral Class (see below)

С

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

and o	pening	traverse	direction	(circle one):	
Н	Hori	zontal			



Vertical

Are prepped grids acceptable for analysis?	(circle one)
if No evniain:	

(196)	No
-------	----

LAB NAME EMSL27 270801091-0008 LAB SAMPLE NO.

EPA SAMPLE NO. SAMPLE TYPE

BA-00033 QA TYPE Α Not QA

LAB JOB NUMBER 270801091 GRID STORAGE LOC. 2708-EMR-99, E

	0.11															Fract.
Grid Grid Opening	Structure Type	No. of Str			nsions	Identification	Mineral Class					1 = yes, blank = no		GO Chrys.		
	+		Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Citiys.
1	GI	ND							-							
	G3	ND														
	GS	No		_												
	G 7	NO														
	G9	ND						104								
	F Z	NO														
	FL	NO														
	を	No														
	F8	ND														
	*10	NO													201724 P. C.	
	٤١	ND														
	દક	NO	***************************************													
	25	NO														
	27	No				·										
+	E9	NO			!											

LAB NAME EMSL27 LAB SAMPLE NO. 270801091-0008

EPA SAMPLE NO.

SAMPLE TYPE

BA-00033 Α

QA TYPE Not QA

LAB JOB NUMBER

270801091 GRID STORAGE LOC. 2708-EMR-99, E

0.11	Grid	Structure	No. of Structures		Dime	nsions	14. 45. 4		Minera	l Class	· · · · · · · · · · · · · · · · · · ·		1 = yes, blank = no			Fract.
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch		EDS	Chrys.
J	J2_	ND														
	J4	NO														
	16	NO							-							
	J8	NO														
	0 ال	No														
	H2	NO														
	14	NO														
	Hb	ND														
	H8	NO														
	H10	NO														
	GI	NO														
	G3	NO														
	65	ND														
7	97	NP														
		RAP	Alstos	_							٠					

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	8.0

	T
EPA Sample Number:	BA-00040
Sample Type (A=Air, D=Dust, DF = Dustfalt):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	780
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0009
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/ 13/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, F
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right--->

Minimum Aspect Ratio (circle one):									
≥ 5:1									
0.5									
None									
None									

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	16
Target # of Structures:	50

Grid Grid Opening	Structure	No. or Structures		Dimensions		Identification	16111	ieiai Ciass i	(see nein	w)	Sketch/ Comments	I = yes, blank = no			GO	
Ond	Grid Operating	Type	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch Comments	Sketch	Photo	EDS	Chrys.
1	JI	No														
	J3	ND														
	15	NO														
	٧٦	NO														
	19	ND														
	H2	ND														
	HY	NO														
	H6	NP														
	H8	N0														
1	1		1	I	1	1	1	1	1	1	l .		1	1	i	1

F-factor Calculation:

Fract.

Indirect Prep Inputs Fraction of primary filter used for Indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate votume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

Mineral Class (see below)

NAM = Non-asbestos material

1 = ves hlank = no

Grid opening traverse direction (circle one):

H Horizontal

B Vertical Are prepped grids acceptable for analysis? (circle one) (ves) No if No, explain:



Α

LAB NAME EMSL27 LAB SAMPLE NO. 270801091-0009

EPA SAMPLE NO. BA-00040 SAMPLE TYPE

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-99, F

270801091

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Mineral Class			1 = y	Fract. GO			
	Opening	Туре	Primary	Total	Length	Width	Toonanoadon	LA	OA	<u> </u>	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	FI	ND														
<u> </u>	‡ 3	No														
	FJ	NO														
	F7	NO														
	F9	No						_								
+	ε8	ND														
				S. S. S. S. S. S. S. S. S. S. S. S. S. S							·					
				W/	lor											

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00041
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	718
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0010
Number of grids prepared	55
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

. Pescador
1/ 13/2008
D
No
iso
8-EMR-99, G
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right -->

Recording Rules:								
Minimum Aspect Ratio (circle one):								
none 233	≥ 5:1							
Minimum Length (um):	0.5							
Minimum Width (um):	None							
	:							

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	18
Target # of Structures:	50

F-factor Calculation:

Indirect Prep Inputs Fraction of primary filter used for Indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for 5	Serial Dilutions
	Second resuspension volume (ml
	Volume applied to secondary filte (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filte (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	reions	Identification	Mir	neral Class	(see belo	w)	Sketch/ Comments	1 = y€	Fract. GO		
O NO	Ond Opening	Туре	Primary	Total	Length	Width	(ССУДНОСЦОТ	LA	OA	С	NAM	OREIGH GOMMENTS	Sketch	Photo	EDS	Chrys.
1	Įν	ND														
	IΨ	NO														
	Īb	No														
	I.R	No														
	110	NO														
	C2	ND											· · · · · · · · · · · · · · · · · · ·			
	cu	No														
	C6	ND														
	C8	ND														
	40	ND														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

Horizontal Verticai

Are prepped grids acceptable for analysis? (circle one) If No, explain:



LAB NAME EMSL27 EPA SAMPLE NO. LAB SAMPLE NO. 270801091-0010 SAMPLE TYPE

BA-00041 Α

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-99, G

270801091

Grid	Grid	Structure	No. of Structures		Dime	nsions	Identification		Minera	l Class			1 = yes, blank = no			Fract.
Gra	Opening	Туре	Primary	Total	Length	Width	identinoadon	LA	OA	С	NAM	Sketch/Comments	Sketch		EDS	Chrys.
2	FI	ND														
	F3	ND				****										
	F5	ND														
	† 7	NO														
	7 9	ND							******	~~~						
	26	No														
	E8	NO									v					
	E10	No														
			XIII.	(a.												
				201					,,,,,				·			
					383											
			-	The state of the s												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	_1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00050
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	806
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0011
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary fitter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11//3/2008
Method (D=Direct, l=Indirect, lA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verifled Analysis, Reconciliation, Lab Blank, Interiab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:				
Minimum Aspect Ratio (circle one):				
none (2 3:1)	≥ 5:1			
Minimum Length (um):	0.5			
Minimum Width (um):	None			

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	16
Target # of Structures:	50

F-factor Calculation:

Indirect Prep Inputs
Fraction of primary filter used for Indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mi.) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

Grid	Grid Grid Opening	Structure	No. of Sti	ructures	Dimer	nsions	Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO	
Gila		Туре	Primary	Total	Length	Width	identinoation	LA	OA	С	NAM	CREECIS CONTINENTS	Sketch	Photo	EDS	Chrys.	
(IZ	2															
Ì	14	ND															
	II6	ND															
	18	ND															
	IIO	NO											_				
	GI	ND															
	G3	NO	_														
	GT	No															
	G7	NO															
7	G9	NO		 													

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): H Horizontal

0

Vertical

Are prepped grids acceptable for analysis? (circle one) No If No, explain:



GRID STORAGE LOC. 2708-EMR-99, H

270801091

LAB JOB NUMBER

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00050
 QA TYPE

 LAB SAMPLE NO.
 270801091-0011
 SAMPLE TYPE
 A
 Not QA

Grid	Grid	Grid Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class			1 = ye	es, blank	= no	Fract GO
	Opening	Туре	Primary	Total	Length	Width	Identinication	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	ま!	ND														
	J3	No				***************************************			****							
	I 2	NO				1										
	17	NO														
	19	ND									•					
-	F 9	No							****							
					4											
				1/3/08												
			,													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

NO

W

M

No

WO

No. of Structures

Total

Primary

EPA Sample Number:	BA-00051
Sample Type (A=Air, D=Dust, DF = Dustfall):	А
Air volume (L), dust area (cm2), or dustfall container area (cm2)	791
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0012
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	R. Pescador
Analysis date	11/13/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, I
Archive filter(s) storage location .	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Biank, Interiab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:				
Minimum Aspect Ratio (circle one):				
none (33)	≥ 5:1			
Minimum Length (um):	0.5			
Minimum Width (um):	None			

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	16
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

E	Fraction of primary filter used for indirect prep or ashing [For dust and dustfell, enter 1.0]
-	First resuspension volume or rinsati volume (mL)
	Volume applied to secondary filter

Inputs for Serial Dilutions

Second resuspension volume (ml.
Volume applied to secondary filter (mL) or used for serial dilution
Third resuspension volume (mL)
Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

00

Grid

Grid Opening

73

FJ

F9 DN 04

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

Vertical

Are prepped grids acceptable for analysis?	(circle one)	1
If No overlains		



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00051
 QA TYPE
 LAB JOB NUMBER
 270801091

 LAB SAMPLE NO.
 270801091-0012
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-99, I

LAB SAN	IPLE NO.	2/08010	91-0012		SAMPLE	IYPE	<u>A</u>		1	Not	QA .] GRII	DSTORAG	BE LOC.[2/08-E	MR-99, I
Grid	Grid	Structure	No. of St	ructures	Dime	nsions	Identification		ication Mineral Class		Class		1 = yes, blank = no			Fract. GO
	Opening	Type	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	G4 12	ay D														
	JZ	ND														
	74	ND														
	طال	NO								-						
	Jg	NO														
	Ø ال	NO														
7	G2	NO														
						AANDERSON										
				Ly	9 4/13/94										A	
				10	1/3/04											

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0. DI3
Scale: 1L =	. 1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

DIA

ND

NO

NO

NO

NO

Grid Opening

Grid

No. of Structures

Total

Primary

EPA Sample Number:	BA-00061
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	630
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0013
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number;	L14656
Secondary filter pore size (um)	0.2

Identification

LA

	R. Pescador 11/3/2008
	D
	No
	ISO
2	708-EMR-99, J
	Westmont
	Not QA
	_

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:					
Minimum Aspect Ratio (circle one):					
none 3:1	≥ 5:1				
Minimum Length (um):	0.5				
Minimum Width (um):	None				

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	20
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust end dustfell, enter 1.0]
First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

GH

56

G8

610

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

OA

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):

H Horizontal

Are p	repped grids	acceptable	for analysis?	(circle one)	6
If No.	explain:				`



LAB NAME EMSL27

LAB SAMPLE NO. 270801091-0013

EPA SAMPLE NO. BA-00061
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-99, J

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Mineral Class			1 = yes, blank = no			Fract. GO	
Gila	Opening	Туре	Primary	Total	Length	Width	1		Identification		Sketch/Comments	Sketch			Chrys.	
2	GI	NO							1000						***************************************	
	G3	N()				4.00										
	G5	NO				****										
	G7	No														
	G9	MD														
	‡ 2_	ND														
	Fψ	ND			_											
	FG	ND														
	18	NO														
4	F10	ND														
			-													
			RALUS	/												
			, , , , , , , , , , , , , , , , , , ,	Y												

≥ 5:1

0.5

None

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00062
Sample Type (A=Air, D=Dust, DF = Dustfall):	А
Air volume (L), dust area (cm2), or dustfall container area (cm2)	6 2 02
Date received by lab	10/21/08
Lab Job Number:	270801091
Lab Sample Number:	270801091-0014
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

		Analyzed by	R. Pescador
		Analysis date	11//3 /2008
	R KM UHlo8	Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
	-1. lind	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
		Counting rules (ISO, AHERA, ASTM)	ISO
		Grid storage location	2708-EMR-99, K
		Archive filter(s) storage location	Westmont
_		QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Recognitions, Let Blank, Interdel)	Not QA
		Reconciliation, Lab Blank, Interlab)	

	·
Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	21
Target # of Structures:	50

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Grid	Grid Opening	Structure			Dimensions		Identification -	Mir	neral Class (see belo	w)	Sketch/ Comments	1 = yes, blank = no			Fract. GO
	Gud Oheulug	Туре	Primary	Total	Length	Width	identinoation	LA	OA	С	NAM	GREECH COMMENTS	Sketch	Photo	EDS	Chrys.
1	I2	NO														
	I4	ND	,													
	I6	ND														
	Il	NO														
	ID	NO														
	GZ	NO														
	GY	ND										,				
	06	NO						_								
	G8	NO														
-	610	NO														

-factor	Calc	ulation:

Recording Rules:

none

Minimum Length (um):

Minimum Width (um):

Minimum Aspect Ratio (circle one):

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (ml.) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL)

> Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one)



If No, explain:

LAB NAME <u>EMSL27</u>

LAB SAMPLE NO. 270801091-0014

EPA SAMPLE NO. BA-00062
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801091

GRID STORAGE LOC. 2708-EMR-99, K

Grid	Grid Opening	Structure	No. of Structures		Dimensions		t al an Alfin a Alian	•	Minera	l Class			1 = y	= no	Fract.	
Gild		Туре	Primary	Total	Length	·Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	Hi	No														
Ì	H3	ND														
	HS	No													and the second	
	H7	NO														
	H9	NO														
	G2	NP														
SAFA hought pro-safe thinks	GY	NO														
	GL	N0														
	G8	NO														
	90	No														
-	E1	NO														
		Resol														
		Ang.	3/cz													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	8.0

EPA Sample Number:	
Sample Type (A=Air, D=Dust, DF = Dustfall):	А
Air volume (L), dust area (cm2), or dustfall container area (cm2)	
Date received by lab	
Lab Job Number:	270801091
Lab Sample Number:	270801091
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	10/22/08
EPA COC Number:	L14656
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11// <u>\</u> 2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	iso
Grid storage location	2708-EMR-99, L
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Lab Blank
incommunity and party mentally	

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:								
Minimum Aspect Ratio (circle one):								
none ≥3:1	≥ 5:1							
Minimum Length (um):	0.5							
Minimum Width (um):	None							

Stopping Rules:	
Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	50

F-factor Calculation:

Indirect	Prep Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsat volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			GO GO
Grid	Grid Opening		Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketchi Comments	Sketch	Photo	EDS	Chrys.
1	JI	ND														
	J3	ND.		Ī												
	JS	2														
	J7	10											,			
1	J9	NO				*****										
2	II	ND						***************************************								
	B	NO														
	Icr	NO														
	17	NO														
1	I 9	NO														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

Are prepped grids acceptable for analysis?	(circle one)
If No explain:	



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	3%
Secondary Filter Area (mm2)	300
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8
rimary filter area (mm2) econdary Filter Area nm2) ategory (Field, Rep., up., Blank) rimary filter pore size	3(00 Field

Structure

Type

40

WD

ND

ND

ND

NO

NP

<u>an</u>

ND

No. of Structures

Total

Primary

EPA Sample Number:	BA-00033
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	658
Date received by lab	10/21/2008
Lab Job Number:	270801091
Lab Sample Number:	270801091-0008
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/22/2008
EPA COC Number:	<u>L</u> ∦4656
Secondary filter pore size (um)	0.2

Identification

LA

(VA)

Analyzed by	E. Wyatt-Pescado
Analysis date	12/1/2008
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-99, E
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Verified Analysis

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:	
/linimum Aspect Ratio (ci	rcle one):
nane (≥3.1)	≥ 5:1
Ainimum Length (um):	0.5
Mnimum Width (um):	None

Stopping Rules	e. 0024
Target Sensitivity:	0.0001
Max# of GOs.	39
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

EDS

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

Grid

Grid Opening

J2

56

JB

210

44

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

Grid opening traverse direction (circle one):

H Horizontal

Horizonta Vertical Are prepped grids acceptable for analysis? (circle one)
If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00033
 QA TYPE
 LAB JOB NUMBER
 270801091

 LAB SAMPLE NO.
 270801091-0008
 SAMPLE TYPE
 A
 Verified Analysis
 GRID STORAGE LOC.
 2708-EMR-99, E

Grid	Grid	Structure	No. of Str	uctures	Dimensions		Identification		Minera	I Class			1 = yes, blank = no			Fract.
Ond	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	61	ND										`				
	63	ND				٠										
	GE	ND														
	67	ayı		Í												
	Ga	No														
	82	an	:													
NAME OF TAXABLE PARTY.	FY	OUY														
	FV	ayı														
	FB	ND														
	FID	ND														
	21	po														
	43	MD														
	٤5	ND														
	٤٦	No												·	<u>"</u>	
	٤٩	ND							1111							

EMSL27 LAB NAME 270801091-0008 LAB SAMPLE NO.

EPA SAMPLE NO.

SAMPLE TYPE

BA-00033 Α

QA TYPE Verified Analysis

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-99, E

270801091

	Grid	Structure	No. of Str		Dimo	Dimensions Identification Mineral Class			Mineral Class			4 140	Fract.			
Grid	Opening	Type	Primary	Total	Length	Width	- Identification -	LA ·	OA	C	NAM	Sketch/Comments	Sketch	es, blank Photo	EDS	GO Chrys.
2	JZ	ND														
	J4	ND														
	56	WD							,							
	JB	ND														
	JID	ND														
	H2	ND														
	14	an														
	H6	MD														
	HB	ND														
	HID	NO														
	61	ND														
	63	ND														
	65	MD														
+	67	ND														
		Tup 12/	109													



Laboratory name:	EMSL27	岩
Instrument	JEOL 100 CX-H (40)	Alca 21369
Voltage (KV)	100	
Magnification	19,000 X	
Grid opening area (mm2)	0.013	
Scale: 1L =	11	
Scale: 1D =	1	
Primary filter area (mm2)	385	
Secondary Filter Area (mm2)	360	
Category (Field, Rep., Dup., Blank)	Field	
Primary filter pore size (um)	0.8	

Structure

NA

ور

ND.

WA

NO

JP

Grid blown

Grid Opening

J3

J5

Jフ

J9

72

H6

178

HO

Grid

No. of Structures

Total

Primary

ec EP	A Sample Number:	BA-00040
	mple Type (A=Air, D=Dust, = Dustfall):	А
3	volume (L), dust area (cm2), dustfall container area (cm2)	780
Da	te received by lab	10/21/08
Lai	b Job Number:	270801091
Lal	b Sample Number:	270801091-0009
Nu	mber of grids prepared	5
Pre	epared by	K. Barnes
Pre	eparation date	10/22/08
EP	A COC Number:	L14656
Se	condary filter pore size (um)	0.2

Identification

LA

Analyzed by	R. Mahoney
Analysis date	1/30/09
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	180
Grid storage location	2708-EMR-99, F
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconcillation, Lab Blank, Interlab)	Recount Different

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:						
Minimum Aspect Ratio (circle one):						
none ≥3:1	≥5:1					
Minimum Length (um):	0.5					
Minimum Width (um):	None					

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs;	16
Target # of Structures:	50

F-factor Calculation:

Fract,

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust end dustfell, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length Width

C = Chrysotile

Mineral Class (see below)

OA

С

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

ED\$

Grid opening traverse direction (circle one): H Horizontal



Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



LAB NAME EMSL27 270801091-0009 LAB SAMPLE NO.

EPA SAMPLE NO. BA-00040 SAMPLE TYPE Α

QA TYPE Recount Different

LAB JOB NUMBER 270801091 GRID STORAGE LOC. 2708-EMR-99, F

Grid Grid		Structure	No. of Structures		Dimensions		 - Identification	Mineral Class			-	1 = yes, blank = no			Fract.	
Ор	Opening	Туре	Primary	Total	Length	Width_		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	FI	NF			,											
1	F3	Geid	lown													
	F5	Grid A														
-	F7	NA														
	F9	NO														
+ 	83	ND														
						7	/Kan 1/3	a /								
								109								
									,							
					·											

Chain of Custody Record

Libby, MT 59923

March 24, 2005 Rev 3

Libby Asbestos Investigation

Na	144654
No.	L14656

From:	СОМ	
	60 Port Blvd, Ste. 200	

U.S. Environmental Protection Agency, Region VIII 1595 Wynkoop Street Denver, CO 80202-1129

Send to:	EMSL-Mobile Lab
	107 W 4th St
	Libby, MT 59923

✓ hand delivery shipped

Date Shipped: __ Carrier Name: ____

270801091

10/21/2008 Hand-delivered

Airbill:

Page 1 of 1

Sample Placed in Cooler/Bag	Index ID	Suffix ID	Sample Date	Sample Media (S=Soil; W=Water; D=Dust; A=Air; B=Bulk Insulation)	Volume (L) or Area (cm2)	Filter Pore Size (um)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	BA-00003		9/17/2008	Α	- 933 L	8.0	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	Ti-
	BA-00004		9/17/2008	Α	-991 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	I I
	BA-00013		9/18/2008	A	-977 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	
	BA-00014		9/18/2008	A	- 942 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	P
	BA-00023		9/19/2008	A	. 960 F	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	
	BA-00024		9/19/2008	A	- 953 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00032		9/22/2008	Α	-780 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	
	BA-00033		9/22/2008	A	> 658 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00040		9/23/2008	Α	~ 780 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00041		9/23/2008	Α	~ 718 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00050		9/24/2008	Α	~ 806 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00051		9/24/2008	Α	√ 791 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	F
	BA-00061		9/25/2008	A	► 630 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	jā-
	BA-00062		9/25/2008	Á	602 L	0.8	5 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR0908-B	1

Total Number of Samples14		END OF SUBMITTAL		
Additional Comments: Slease See Attac	kmeat ~	Thouk you!		_
QU		\mathcal{O}_{-}		
Mai Com 10-21-0	8 0957	R.K. Maharay EMSC	- <u> 0 2/ 08</u> 09 Date/Tirhe	157 OK Accept
Relinquished by (Signature and Company) Relinquished by (Signature and Company) Relinquished by (Signature and Company)	.11/-	Received by (Signature and Company) Received by (Signature and Company)	27/09 9:0	9 Complete
Religiquished by (Signature and Company)	Date/Time /	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Delinewished by (Cianature and Comment)	Data/Time	Passing des (Signature and Company)	DataTima	
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

35 LBS

1 OF 1

JOMAY WYATT-PESCADOR 406-293-9066 EMSL ANALYTICAL, INC. 107 WEST 4TH STREET LIBBY MT 59923

SHIP TO:

CHARLES LACERRA 856-858-4800 253 EMSL ANALYTICAL, INC. 107 HADDON AVENUE

WESTMONT NJ 08108-2711

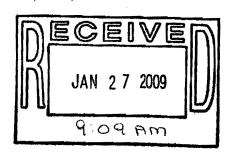




TRACKING #: 1Z Y84 048 03 9892 8735



BILLING: P/P



Page 1 of 1

EMSL Analytical, Inc.

107 Haddon Avenue

Westmont, New Jersey 08108

Phone: (856) 858-4800 Fax: (856) 858-9551



LETTER OF TRANSMITTAL

To:	Scott Carney		Date:	February 9,2009	
	EMR, Inc.		From:	Charles E. LaCerra	
	11 East Superior Street		Re:	Libby, MT BNSF Work	
	Suite 260			Mobile Lab Analytical Reports	
	Duluth, MN 55802			See Below	
	Phone: 763-277-5200				
We are se	nding you: × Att	ached		Under separate cover via	
	Solicitation		of Letter		
	Subcontract	As no	oted	Other	
	Laboratory Samples	Maly!	tical Repor	rts	
These are	transmitted as indicated	d below:			
	ExecuteOriginal(s)	Revie	w & Con	nment For Approval	
	ReturnOrginal(s)	As Re	equested	Respond as instructed	
\boxtimes	For Your Information/File			Other	
Remarks:					
Enclosed p	olease find one (1) copy of	f the follow	ing mobil	le lab analytical reports for analysis for	
your review	w and use for the above re	eferenced p	roject:		
270001000					
270801090)				
Please feel	free to contact me with a	ny questior	ns or if yo	u require additional information	
Copy to:			Signed	: Charla Lalina	
copy to.			_ 5151100	· Characte and con	

INTERNAL CHAIN OF CUSTODY

10/21/2008 10:21:45 AM

Order ID: 270801090

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

7,

Suite 260

Duluth, MN 55802

(218) 625-2337

L14655

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Customer ID

Customer PO:

Received:

EMRI78

10/21/08 9:57 AM

EMSL Order:

270801090

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Test: TEM ISO	10312 <u>м</u>	atrix Air	<u>TAT:</u> 120 H	our	Qty:	8
Acct Sts: Inter- Lab Sample 7	Sisprsn:	epodell	Sample 🗸	oney Acceptable Unacceptable	Date: 1	0/21/2008
Samples Relind Samples Recei Package Mailed	ved:	Date Date Date	Comments	MANUS (ME COME O AND LOSS) AND EAST OF THE COME OF A		
Method of Deli Includes: (Circ	very: le)		Initial Prep (Initial Filter Prep (Initial Grid Prep (Initial Grid Prep (Initial Grid Prep (Initial Initial Filter Prep (Initial Filtr Prep (Initial Filter Prep (Initial Filtr Prep	ls/Lab):		Date: 10/21/08 Date: Date: 10/21/08
Benchsheets Micrographs	Sample Slides GridBox	Sample filters Other	For Special Projects U			
Final Package Re	ceived:	Date:	QC Selection: Date Package R Date Package M		***************************************	Date: 커니o의 Date: 커니o의

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0001	I BA-00005 RS		10/26/2008 9:57:00 AM
270801090	270801090-0002	J BA-00015		10/26/2008 9:57:00 AM
270801090	270801090-0003	K BA-00025		10/26/2008 9:57:00 AM
270801090	270801090-0004	L BA-00031		10/26/2008 9:57:00 AM
270801090	270801090-0005	м ВА-00039		10/26/2008 9:57:00 AM
270801090	270801090-0006	N BA-00049		10/26/2008 9:57:00 AM
270801090	270801090-0007	6 BA-00060		10/26/2008 9:57:00 AM
270801090	270801090-0008	P BA-00069	_	10/26/2008 9:57:00 AM

10/21/2008 10:17:15 AM

Order ID: 270801090

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14655 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Received:

Customer PO:

EMSL Proj ID:

270801090

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Test: TEM IS	O 10312	Matrix: Air	-	<u>TAT:</u> 120 Hour	Qty: 8
Order ID	Lab Sample #	Cust. Sample #	Location		Due Date
270801090	270801090-0001	BA-00005			10/26/2008 9:57:00 AM

ANALYZED:	RSPS	Date:	11/6/08
Preliminary Data Sent to Special Projects:	RKm	Date:	11/6/08
Osta Entry:	عاق	Osta:	WW8
Structure Review:	XC	Date:	19/1/03 3/4/0
Deta Validation:	KL	Date:	Buller
Reported to Client:	KL	Date:	12/1/08

Micrograph Mumber	Type Diffrection or Monthology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

L14655

Phone: (218) 625-2332

Cust COC ID

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801090

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0002	BA-00015		10/26/2008 9:57:00 AM

Comments:	***************************************	***************************************	

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

ANALYZED:	RAP	Date:	11/6/08
Preliminary Data Sent to Special Projects:	RICEN	Date:	11/6/08
Osta Entry:	Qi	Date:	14408
Structure Review:		Date:	
Data Validation:	Y.C	Onte:	19/1/08
Reported to Client:	KL	Oste:	12/1/08

Micrograph Number	Type Diffraction or Morphology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project: (218) 625-2337

Phone: (218) 625-2332

L14655

• •

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID: Cust COC ID 10/21/08 9:57 AM

270801090

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0003	BA-00025		10/26/2008 9:57:00 AM

Comments:		

ANALYZED:	KAPY	Date:	11/10/08
Preliminary Data Sent to Special Projects:	R Kin	Date:	11/6/08
Data Entry:	_وي_	Date:	u 11/08
Structure Review:		Date:	
Datz Valildation:	KL	Date:	12/1/08
Reported to Client:	KL	Date:	12/1/08

Micrograph Number	Type Diffraction or Monthology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14655

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

Phone: (218) 625-2332

Customer ID:

Customer PO:

Received:

EMRI78

10/21/08 9:57 AM

EMSL Order: 270801090

EMSL Proj ID: **Cust COC ID**

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0004	BA-00031		10/26/2008 9:57:00 AM

Comments:		

ANALYZED:	RIP	Date:	11/6/08	
Preliminary Data Sent to Special Projects:	R/cm	Date:	11/6/08	
Data Entry:	Qe_	Date:	Willo8	
Structure Review:		Date:	[-	
Data Vailldation:	KC	Oafe:	12/1/08	
Reported to Client:	KL	Date:	12/1/08	

Micrograph Number	Type Diffraction or Monatology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14655

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801090

BNSF Libby, MT 2008

10/21/08 9:57 AM

EMRI78

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0005	BA-00039		10/26/2008 9:57:00 AM

Comments:	
ļ	

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

ANALYZED:	assof	Date:	11/6/08
Preliminary Data Sent to Special Projects:	RKm	Date:	11/6/08
Data Entry:	<u>a</u>	Date:	WW08
Structure Review:		Date:	7, 1
Data Validation:	KL	Onte:	12/1/08
Reported to Client:		Date:	

Micrograph Number	Type Diffraction or Morphology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 Fax:

L14655

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

EMSL Proj ID:

Customer ID:

Customer PO:

Received:

EMSL Order:

270801090

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0006	BA-00049		10/26/2008 9:57:00 AM

Comments:	

ANALYZED:	esp	Date:	11/4/08
Preliminary Data Sent to Special Projects:	Klen	Date:	11/6/08
Data Entry:	.ou	Date:	11/1408
Structure Review:		Date:	
Datz Validation:	KL	Date:	12/1/08
Reported to Client:	KL	Date:	1-2-11/08

Micrograph Number	Type Diffraction or Morphology
-	
	<u> </u>

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

L14655

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

EMSL Order:

Cust COC ID

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801090

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Order ID Lab Sample # Cust. Sample # Location **Due Date** 270801090 270801090-0007 **BA-00060** 10/26/2008 9:57:00 AM

Comments

ANALYZED:	RAP	Date:	11/6/08
Preliminary Data Sent to Special Projects:	Ricm	Date:	11/6/08
Data Entry:	.01	Date:	11/6/08 4408
Structure Review:		Date:	
Data Validation:	Z.	Osta:	12/1/08
Reported to Client:	KL	Onte:	12/1/08

Micrograph Number	Type Diffraction or Morphology

10/21/2008 10:17:16 AM

Order ID: 270801090

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Samples collected 9/17, 18, 19, 22, 23, 24, 25/2008

L14655

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801090

EMRI78

BNSF Libby, MT 2008

10/21/08 9:57 AM

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801090	270801090-0008	BA-00069		10/26/2008 9:57:00 AM

Comments:

ANALYZED:	RAPU	Date:	11/6/08
Preliminary Data Sent to Special Projects:	Rkm	Date:	11/6/08
Data Entry:	o.	Date:	wwos
Sinuciae Review:		Date:	
Data Valildation:	Y_L	Date:	12/1/08
Reported to Client:	KL.	Date:	12/1/08

Micrograph Number	Type Diffraction or Monthology		
and the second s			



SAMPLE ID

Status Analyzed
EPA Sample Number BA-00005
QA Type Not QA

Lab Sample Number 270801090-0001
Sample Type Air
Category Field

Prep Direct Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 29
Number of Grid Openings (chrysotile) 29

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 1028 L
Sensitivity (amphibole) 9.93E-04 s/cc
Sensitivity (chrysotile) 9.93E-04 s/cc

Recording Rules:

Min. AR Min length (um)		Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	29	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<≃.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00005_270801090-0001_ISO_11-06-08_D.xls

12/1/2008, 1:18 PM

SM

FILE NAME: BA-00005 270801090-0001 ISO 11-06-08 D.xls

FILE TYPE: Original

Recording Rules:

Stopping Rules:

≥ 3:1		•	Minimum Aspect Ratio	Г
0.50		0	Minimum Length (um)	1000
none		E	Minimum Width (um)	Г

Target Sensitivity 0.0024 GOs required to reach 13 target sensitivity Maximum # of GOs 50 Maximum # of Structure

Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

Laboratory name:	EMSL2	7		
Instrument	JEOL 100 C (30)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field	~		

EPA Sample Number:	BA-00005			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1028	1		
Date received by lab	10/21/2008			
Lab Job Number:	270801090			
Lab Sample Number:	270801090-0001			
Number of grids prepared	5			
Prepared by	K. Barnes			
Preparation date	10/21/2	800		
EPA COC Number	L14655			

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Analyzed by	R. Pescador		
Analysis date	11/6/2008	3	
Prep	Direct	~	
in sample type = air, is there loose material or debris in the	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-9	7, t	
Archive filter(s) storage location	Westmont		
Polity and recognised the first life of the Recognition was to be a second	10 in 20 in 20		
F- factor	Ž,		
QA Type	Not QA	•	

COMMENTS

Filter Status

Analyzed

EPA SAMPLE ID: BA-00005 LAB SAMPLE ID: 270801090-0001 Sample Type Air Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

L. Ramowski 11/11/2008

QA by: K. Lusher 12/1/2008 QA date:

			13 - CONT. STATE TO	Contraction for the section of the s	 "Control of the control of the control of
Larget Sc	mennin	w Waarhad	Comple	to current (-(), then stop.
I AI YOU OU	PIROTURE	y, i veacited	COMPLE	w current or	, ultiliator.

arget	arget Sensitivity Reached-Complete current GO, then stop.										-			
Grid	Grid	Structure	No. of Structure		nensions (a)	Identification		Mineral Class (b)					s, blank = no	Fract. GO
	Opening	Туре	Primary Tot	×	th Width		LA	OA	С	NAM	Comments	Sketch	Photo EDS	
1	J2	ND	**************************************	100		King City	计算线	學院。其時	300.44	1000		建的影響	territoria	4 444 FA 12
1	J4	ND			(44 - 144 A)	2.700,000 2.70	40.40	الد الالالالالا	an Asir≘	100	20 2 20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	16 37 3	San San San San San San San San San San	a Carrier of
1	J6	ND		4 7 7	3 4 4 2 7 4 3		1		M 6.0			100		
1	J8	ND		(3.4)	et Hilliam	Con side	3.6 (mg/s)	MA I	100				4.741. 1.323	100 Dec 100
1	J10	ND		300.00			1.52345		2.000				0.16%	1
1	1	ND			100									
1	13	ND	Out the second		4897		45-464	10 m	1000	6. 18 m				S Comment
1	15	ND	Apple 1997	3.00		E. Barrell		700	200	78 s 78 s		A CONTRACTOR		
1	17	ND			To the second	Compared to							Special Comment	
1	19	ND		-	1			100	100			21.76	2 9350	
1	F2	ND			Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Carlo de Car	The State of				10000000		41. A.A.		
1	F4	ND						100000				***		-83-1 SMV
	F6	ND		1475			7 10 10 10			3.5				1 2 2 2
	F8	ND NB			Mar SCORE	2.50			Cardina.	e e				1 2 2 2 2 2 2
	F10	ND		PROFILE TO SERVICE	40 - 1 A - 1 A - 1	A Company	Telephone September							
2	J1	ND	584						4 15 5	A Company			2642	
2 2	J3	ND ND	7					100000	1927			25023		
	J5 J7	ND ND	7.74 (4.15 × 1.15 (4.15)	Const. Control Con.				1.0000	350 193				Constitution of the consti	
2 2	J9	ND ND		100000					Add to the	4.6				
2	12	ND	2000 V				100000000000000000000000000000000000000	and an inches		7130467			9 2 162000 W	
2	14	ND					100		* 1500				200	
2	16	ND					Server and the server	Sept.	20.63	A management of the	46			
2	18	ND	All and the second seco	100			200		200	etar %				100000000000000000000000000000000000000
2	110	ND			14.7	27.	1 (1921)					* 1 Table 1		
2	C3	ND					All District	124	200	100			100	0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0
2	C5	ND	With the second	in the least of		220000000	or some	10,000					100	
2	C7	ND	Kertone et		gra tabelagy.	TV SINCE	100	1300.00		4.627		er er er er	100	100
2	C9	ND	201 22 14 22 22	100	35 Van. 25 V	argent de la serie.	-323-33	Sept.	10000			25.00		10000

1-06 EMSL Versit

385.0 mm2

1.00E+00

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Status Analyzed Effective filter area
EPA Sample Number BA-00015 Indirect factor
QA Type Not QA Number of Grid Openings (amphibole)

QA Type Not QA Number of Grid Openings (amphibole) 32
Lab Sample Number 270801090-0002 Number of Grid Openings (chrysotile) 32

Grid opening area 0.0130 mm2 Sample Type Air Category Field Volume (L) or Area (cm2) 938 L Prep Direct Sensitivity (amphibole) 9.87E-04 s/cc 9.87E-04 s/cc 10312 Sensitivity (chrysotile) Counting Rules

 Recording Rules:
 Min. AR
 Min length (um)
 Min width (um)
 Stopping
 Target S
 Max GOs
 Max N

 Rules:
 ≥ 3:1
 0.5
 none
 Rules:
 0.0024
 32
 50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

 Check
 OK
 OK
 OK

 Grand total
 0
 OK

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)			
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00015 270801090-0002 ISO 11-06-08 D.xls

12/1/2008, 1:26 PM

SM

FILE NAME: BA-00015 270801090-0002 ISO 11-06-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27	
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed	•	

COMMENTS

EPA Sample Number:	BA-00015			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	938	·		
Date received by lab	10/21/2008			
Lab Job Number:	Number: 270801090			
Lab Sample Number:	270801090-0002			
Number of grids prepared	5			
Prepared by	K. Barnes			
Preparation date	aration date 10/21/2008			
EPA COC Number L14655				

Analyzed by R. Pescador		
Analysis date	11/6/2008	
Prep	Direct 🔻	
loose material or debris in the	No 🔻	
Counting rules	ISO (Air or Dust)	
Grid storage location	2708-EMR-97, J	
Archive filter(s) storage location	Westmont	
to a second grafficulty and given the second second	\$107\$ 7076 S	
F- factor	1	
QA Type	Not QA	

Recording Rules: Stopping Rules:

CCOI	MILL	itules.	Stopping I	suics.
3:1	•	Minimum Aspect Ratio	U.UUL.T	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
non	e	Minimum Width (um)		Maximum # of GOs
			- 50	Maximum # of Structure
£4	C		14	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00015

LAB SAMPLE ID: 270801090-0002

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK
OK - No errors found

Data Entry by: L. Ramowski
Data Entry date: 11/11/2008

QA by: QA date: K. Lusher 12/1/2008

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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 13 15 17 19 H2 H4 H6 H8 H10	ND ND ND ND ND ND ND ND ND ND ND ND ND N	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
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1	17 19 H2 H4 H6 H8	ND ND ND ND							100							16 B. A. *
1	H2 H4 H6 H8	ND ND ND ND				7.2			4.00	120	A11.7.29.34	THE RESIDENCE OF THE PARTY OF T	100012104	3.08.51	100 July	TX X 12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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	Н8			100	Contract of the Contract of th	17.85%	12 (13 A X A X		3.36				or and the	092 W		
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	U40				100	540			34 SA	100		Waller	100	25.0		
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	G1	ND			(Sec. 7.5)			6-00 Asi	700	1000				3390.4	100	
	G3	ND	The second	No.	1000			100	4.34	C.C.Jack	200			Sec.	27.00	
	G5	ND			Martin States				100	4000	10 (0)			364-34	Bear X	
	G7	ND	14.5 Back 45.	998 A. 124	10,175			30.00	204000	1000						Marian Company
	G9	ND		200				M3.775	200	* News			1000		200	
	F2	ND	1						46.00	36.200		A Committee of the Comm	1000	4.4	Pretionly.	1 10 10 10
	F4	ND					40.00				September 1			****		
	F6	ND			20.00					5.46	6.4	Section 1		rate (Section 1)		
	F8	ND ND						7	12 (100 C)	1000	esercia de la composición dela composición de la composición de la composición dela composición dela composición dela composición de la composición de la composición dela composición de la composición dela composición de			4.00	100	
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	J1	ND ND				- 48-74		200	1996	de de la			4.6			
	J3 J5	ND ND			200				Tipopolitica	1.	# 10 AP					
	J7	ND		11 THE R. L.					2.30	100	10 9 45 5 F		7			
	J9	ND			0.0000000000000000000000000000000000000	100 SE		der State of St			1.0					
	H1	ND	200	A CANADA		7.60			-	100000	Carlo Magazin			Section 2		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
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	H7	ND		Page 1		1.000			1000000	4.00		117017	(
	Н9	ND	2000000	2010		10000		100			90 11 184		2000	1954		
	F1	ND	Carl de	4474 145 14		11.576663				1076 374	-					
	F3	ND	100	903 at 100	1544. A S		TERMINE	14a (4.1)	25/2019	100	0.0045.479		3. Table 1. Table 1.	24.5	10	

_11-06 EMSL Versit

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00025

QA Type Not QA Lab Sample Number 270801090-0003

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 31
Number of Grid Openings (chrysotile) 31
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 988 L
Sensitivity (amphibole) 9.67E-04 s/cc
Sensitivity (chrysotile) 9.67E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	13	50

COUNTS (based on countable structures only)

Bin	LA	OA	<u>C</u>	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bi <u>n</u>	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00025_270801090-0003_ISO_11-06-08_D.xls

12/1/2008, 2:10 PM

Si

FILE NAME: BA-00025 270801090-0003 ISO 11-06-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field		
Filter Status	Analyzed —		

EPA Sample Number:	BA-00025		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	988		
Date received by lab	10/21/2008		
Lab Job Number:	270801090		
Lab Sample Number:	270801090-0003		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/21/2008		
EPA COC Number	L14655		

Analyzed by	R. Pescador		
Analysis date	11/6/2008	3	
Prep	Direct	•	
It sample type — air, is there loose material or debris in the	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-9	7, K	
Archive filter(s) storage location	Westmon	ıt	
Antonio de la composição de la Región de la Composição de la Región de la Composição de la Región de la Regió	\$100 P. 1897 S. 160		
F- factor	3.1		
QA Type	Not QA	•	

0.0024 13 0.50 Minimum Length (um) target sensitivity Minimum Width (um) Maximum # of GOs 13 none 50 Maximum # of Structure Estimated # of GOs F-factor Calculation: Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial

Recording Rules:

≥ 3:1 Minimum Aspect Ratio

Inputs for Serial Dilutions

dilution

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Stopping Rules:

Target Sensitivity

GOs required to reach

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing



Grid opening traverse direction:	V

COMMENTS

EPA SAMPLE ID: BA-00025

LAB SAMPLE ID: 270801090-0003

Sample Type Air Count Rule 10312

Prep Diřect QA Type Not QA ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: K. Lusher QA date: 12/1/2008

선물 불의 사람들은 원인이 이 작년을 살아 들은	A CONTRACTOR OF THE WAY	The second control of the first of the second second	a little tribe in the little of the stranger little in the	
Maximum # of	Grid Openinas	Reached-Compl	ete current G	U then stop.

Grid	Grid	Structure		No. of Structures		sions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Grid	Opening	Туре	Primary	Total	Length	Width	denuncation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	H-1477		10.00	7.57	377-278545 S	7 Mg 7 7 7	100	12	24,775	Mark the second second	(140/th	17.75		N. 3-3-4
1	J4	ND			5.04	100	10 May 12				Waller Sa			100		
1	J6	ND	100			100	THE CALL			734 (30).					27-44	
1	J8	ND	34045		erani e		A 2 4 4 10 10 10 10 10 10 10 10 10 10 10 10 10	4.4	0.55			60000000000000000000000000000000000000		37		
1	J10	ND	200				The State of					Control of the second				
1	H2	ND					15.00	1200	- (11)	17.50	10 m				1895	7 16 1 mg = -
1	H4	ND				Lector	22.00		100	400		With the same of t		400	Mar.	100
1	H6	ND	33.66			4.0	有关。在 第266年6		。这样 证	14.5	7 X	West Control		F1 (2)	gara.	
1	H8	ND	4.0			14.		Res (Fig.	A SALE	39.5	A separate	Programme and the second		190		4.7430.4
11	H10	ND_	97 (g. 14 4)				State of the state		200	- 50h			A CONTRACT		10.	
1	G1	ND			7417	1.089	AND COLUMN		100		all results	14 m 2 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1	12 12 14	4.50	14.2	20077 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
1	G3	ND_			9 (0)		Market and	19 W	11.00			Walter Commence		Self a F	Harry I.	100000
1	G5	ND		17:36		734		100	2. 动物器	1000	2745		13444	5.79		
1	G7	ND	24. A.E.	Carrier Con-	**************************************	* Contraction	1	188	25424		(X) (A)		100	777		
1	G9	ND	44.45	alle de la company		13,570	STATE OF STREET	100	7 117 44		March March		10/48	(A)	12.1.6	
2 _	11	ND	7.55				tradition to a	100		ad.	44.77			100		
2	13	ND	76 St. 51	CARTON TO	15.4	on a course	Car acti	### \$ 15 h	100	30 Ju	200		0.00	4.0		1.00
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2	17	ND	20.18		4,440,00	4.5		4 20 (1)	330	100				7 (2)		
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22	H2	ND_		A comment	1,100			344	200							100
2	H4	ND					35(46)2	20.72	100		or Harris			100 M	2011/01	
2	H6	ND_	46.5		e Contract	3.42		A100		7 50	100 to 100 to	The second of th		1 2 2 2 2 2 2	* (* * * * * * * * * * * * * * * * * *	Park Section
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2	H10	ND	75.00			2.7698			250		1 3 C 43		254 251		100	200
2	G1	ND				17.413.55		- 15	100		100.00				r de	
2	G3	ND	100		****	1000	A SECTION OF	46.5	100					Service.		100
2	G5	ND			200	125.514	Quality Property	200	1.5	7.00	1.00					100
2	G7	ND	4.000	Parla:	4962 St.		P (8) (8) (8)	record (1.00	8件第29	e sa s			APRICE SE	100	100000
2	G9	ND				17.44.76	200		1000	- 22	10000			6		SEP E PAGE
2	F8	ND					3-54-05-03	THE STATE OF	2702		() () () () () () () () () ()	14,000 and 15,000 and 15		100		and the area



SAMPLE ID

Status

QA Type

Analyzed EPA Sample Number BA-00031 Not QA

Lab Sample Number

270801090-0004 Air

Sample Type Field Category Direct Prep 10312 Counting Rules

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00

Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39

Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 779 L Sensitivity (amphibole) 9.75E-04 s/cc 9.75E-04 s/cc Sensitivity (chrysotile)

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

OK Check OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	a			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00031 270801090-0004 ISO 11-06-08 D.xls

12/1/2008, 2:13 PM

FILE NAME: BA-00031 270801090-0004 ISO 11-06-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL2	7	
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field	•	
Filter Status	Analyzed	•	

EPA Sample Number:	BA-00031		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	779		
Date received by lab	10/21/2008		
Lab Job Number:	270801090		
Lab Sample Number:	270801090-0004		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/21/2008		
EPA COC Number	L14655		

Analyzed by	R. Pescador		
Analysis date	11/6/2008	3	
Prep	Direct	•	
ir sample type – air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-97, L		
Archive filter(s) storage location	Westmon	t	
គឺ ស្រាស់ខ្លួនការប្រជាជន មានការប្រជាជន ទីស្សីស្សីទី ស្តីទី (១៤)	gere garegi		
F- factor			
QA Type	Not QA	~	

Recording Rules:

Stopping Rules:

16 Estimated # of GOs

			A CONTRACTOR OF THE PARTY OF TH		
į	≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
	0.50		Minimum Length (um)	16	GOs required to reach target sensitivity
	none		Minimum Width (um)		Maximum # of GOs
			•	50	Maximum # of Structure
				35 (1.50.50)	

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (ml.) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

V

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: BA-00031

LAB SAMPLE ID: 270801090-0004

Sample Type Air Air 10312

Prep Direct

QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: K. QA date: 12/

K. Lusher
12/1/2008

Data En			11/11/200			FERRISON SANTON CONTRACTOR	QA date:	12/1/200	8						
Target Sensitivity Reached-Complete current GO, then stop.					p.		· 英語					•			
Grid	Grid	Structure		tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)				s, blank = r	o Fract. GO
ÇG	Opening	Туре	Primary	Total	Length	Width	- Identinodion	LA	OA	С	NAM	Comments	Sketch	Photo E	DS Chrys.
1	11	ND		2.77		W. Corto		第4 75年	/牛髓型	種的	李俊,袁	100000000000000000000000000000000000000	7542	77.00 M	CONTRACTOR OF
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1	15	ND	2.25			Attest.	-79 # .5		1.50	数据	1017		Fig. 1		
1	17	ND	建筑			A Section	12-120 307-3						Sept.		
1	19	ND	6 13 A S	4.75		-Kata	7.77	624 A 144	1864 7		2549		Action 12 (CV)		- 10 A
1	H2	ND	建 型。此一。		10 T 10 T			1201		3 8 8	44		Part of		
11	H4	ND	17 17 W	: - 40°				3	100	<i>(19</i>)	F 2 2-71			F44 2	3.00
11	H6	ND	4 4 V 4 V	100	ve ji ta	1601F		544 Mil.		784		7 (10)		5 3 A Z	
1	H8	ND				Sales .	24 St 2 C 2 2 4 4 1	1802.5	300	3	TO year		34 A	4.12	7
1	H10	ND	87 SE 1755A	1000		de y	27.24.00	128	1.77	Sec	10.56%		100	e sudden and	137 22 232
1	F1	ND	343					1986	70 00 1						Fig. 1. St. 6
1	F3	ND			142	300 B	3000	Part of			100		24.5		
1	F5	ND	Contract of					18425	448	1.77				100	
1	F7	ND	3 4 4 5	6.07			A 4500		78.0		\$ 1550	14 - 15 - 15 - 15 - 15 - 15 - 15 - 15 -			
11	F9	ND	# 15 m				1000	100			40000			4 多 数	
1	E2	ND .	er i	- 1000	1.0		3 3 Sept. 19 (6)	100			2	35 Table 10			2.3
11	E4	ND						4.0							
1	E6	ND.	N. 17	7.0			100	2000		- 6					
1	E8	ND	10-11-2	1000		CHARGE STATE			100	6,64 (4)	303-634		25 00 O		204
1	E10	ND	and the	100	3.79 W 91 L 17	folia:	1000	17 M. 19 M. 19		336				36	Tar Park
2	J1	ND	April 1965							10 mg 10 mg	1.10		200		
2	J3	ND_	1,462				100	# 1 P				100		, T	
2	J5	ND		100			141	7.0					Section 4		7.0
2	J7 J9	ND ND					-			A Section 1					
2	12	ND ND					200		78-1964	4.0			1 1 1 1 1 1 1	5.0	The state of the s
2	14	ND ND					Service Control		Paragraph		27 - 1660) 4 20 32 33 33		25.075		
2	16	ND							resident state	of the second			aprile 1	400	
2	18	ND	700					20000000					100 100 100 100	200	
2	110	ND	100 mm		A ST				and the same	and the same	4.480		100		
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2	H3	ND	equal (
2	H5	ND	200	and the second			1000	440.15231	ery, etc	200		4	**************************************		
2	H7	ND	44.75					17,04	34413.2	20.00	0 3000		Editor Charter	12.0	200 20000
2	H9	ND	A desired		7 7 1 7 1		The second	40.00		Marie 1	100.740		467 755		
		112	ACCORDING TO SERVICE SERVICES	A.W. Williams	THE CHICAGO STATE	AND DESCRIPTION OF THE PERSON	AND A SECURE OF THE PARTY OF TH	A SANGAR CONTRACTOR	STATES OF STREET	THE CONTRACTOR OF THE PARTY OF	Plantar Assignate	The state of the s	77.2	987.805335-135352 - 1253	estate to Design Control (Control

	2	F1	ND	
2	2	F3	ND	
	2	F5	ND	
	2	F7	ND	

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ISO_11-06 EMSL Versit

50

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00039

Not QA 270801090-0005

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Rules:

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 37
Number of Grid Openings (chrysotile) 37

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 817 L
Sensitivity (amphibole) 9.80E-04 s/cc
Sensitivity (chrysotile) 9.80E-04 s/cc

Sensitivity (chrysotile) 9.80E-04 s.

Stopping Target S Max GOs Max N

0.0024

RecordingMin. ARMin length (um)Min width (um)Rules:≥ 3:10.5none

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK
Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	ď	>=.5 to < 5	<=.5	>≃ 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00039_270801090-0005_ISO_11-06-08_D.xls

12/1/2008, 2:15 PM

SM

FILE NAME: BA-00039 270801090-0005 ISO 11-06-08 D.xls

360.0

Field

Analyzed

FILE TYPE: Original

Recording Rules:

Stopping Rules:

11000	4.111	1 Tuico.	Ctopping ranco.			
≥ 3:1	•	Minimum Aspect Ratio	0.002	Target Sensitivity		
0.50		Minimum Length (um)		GOs required to reach target sensitivity		
none		Minimum Width (um)		Maximum # of GOs		
			50	Maximum # of Structure		

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

16

Estimated # of GOs

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

3rid	opening	traverse	direction:	
------	---------	----------	------------	--

EMSL27	EPA Sample Number:	BA-0003	9
JEOL 100 CX (30)	Sample Type	Air	•
100 kV	Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	817	
19,000 X	Date received by lab	10/21/200	98
0.0130	Lab Job Number:	27080109	90
1.000	Lab Sample Number:	270801090-	0005
1,000	Number of grids prepared	5	
385.0	Prepared by	K. Barne	s

Preparation date

EPA COC Number

Analyzed by	R. Pescador			
Analysis date	11/6/2008			
Prep	Direct 🔻			
loose material or debris in the	No 🔻			
Counting rules	ISO (Air or Dust)			
Grid storage location 2708-EMR-97				
Archive filter(s) storage location	Westmont			
and the control of th	s in southern			
F- factor				
QA Туре	Not QA			

COMMENTS

Filter Status

Category

Laboratory name:

Instrument

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

Grid opening area (mm2)

Primary filter area (mm2)

Secondary Filter Area (mm2)

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

10/21/2008

L14655

EPA SAMPLE ID: LAB SAMPLE ID: BA-00039 270801090-0005 Sample Type Air Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK
OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: K. QA date: 12

K.	Lusher	
12	/1/2008	

Data Ent			11/11/200			on the later and a second state of the second	QA date:	12/1/200	08						
Target S	Target Sensitivity Reached-Complete current GO, then stop.			p.											
Grid	Grid	Structure				ions (a)	Identification		Mineral C	lass (b)				s, blank = no	Fract. GO
0.10	Opening	Type	Primary	Total	Length	Width	I deriamoditori	LA	OA	С	NAM	Comments	Sketch	Photo EDS	Chrys.
1	G1	ND	はなべて				可以扩充发展	* **	1.00			1974 940 775 773	10000		
11	G3	ND	表型集工	10.2	The second	West and	7.2	a de	10.00	2.0					
1	G5	ND				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				100			24.57		
11	G7	ND	在 数据: 1	in and		州为社 。	4,72,250	400	100	# pr	A11.40			a de Sa	
1	G9	ND	1.74 mi	Y 37 7 20				100	100	1000					
11	F2	ND					1907	200		(1.8)					
1	F4	- ND				-		中華特別		25 (2)	987	4.0000000000000000000000000000000000000		4.994	
1	F6	ND	A 45 (1)	100	****	Albert 1	1920 75	* 254	0.00	200	143.64			Page	
1	F8	ND	1				100			Page 1			1	City and County Street	
1	F10	ND		3 15 Sept.		ALBERT !	100	10.00			4.76	400000000000000000000000000000000000000	Sec.	1000 615 4	240 60
11	E1	ND			10 To 10 To	制度建	242 1.22	145.9	44.60	4076	114				
11	E3	ND		1996		100		10.04					300 P.		
1	E5	ND	A Marian	in the			49 74 at 130 a	Specific	100		100	200			
1	E7	ND	1. Fig. 27	44 February	A William					14.0	100			10.50	
1	E9	ND			100		745/5 - 15 9	96.25	1000		(1) ja		1-0-6	at the water	919795
1	D2	ND		ing a part	P POLE	rations.				155 W		10 mg			
1	D4	ND				GALLERY S				35.55		The state of the s			2 6 10 10 61
1	D6	ND		245 AM		All the	1. T. 1.	4.2	100	700	10.00				10 200 65
1	D8	ND	##5# D	10 mg/mg/		鐵路等。	and the second			1300					
1	D10	ND	100 B. S.		3000	Signal :				g de la	<i>120</i> PM 2				
2	J2	ND			Park 1		3.	A STATE		36.1P+					
2	J4	ND		2 - 1 2 2 3			40.00		Was a second	46.0	all the state of				e de Marie
2	J6	ND	# 72 × 3				1990	100	36,00		e De salte		20-10-10-2		ALCOHOL: 31
2	J8	ND	A Company	en i serie		7000		4000			A TOP			100 000	
2	J10	ND					75. 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				4.5 175		art des		
2	H2	ND		100	100 N	et district	A			200					
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2	H8	ND		100				1000	809480	Market St.					
2	H10	ND		24 (15.24s)						CONTRACTOR				aliteration and the	
2	G1 /	ND		Contract of					78.850				200	107	
2	G3	ND		10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			A				30 - 10 - 2		AND THE PERSON	4 4 4 7 4 4	
2	G5	ND	20	4.034					4.4				A 670 C		
2	G7	- ND		7.4			96-77-38-7 5 23	10.00	10 m	63,7 64	100				
2	- G9	ND	A production	1.00		adjuner.	4.5	1, 10, 10		1827					

2	F2	ND	
2	F4	ND	

1-06 EMSL

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

Versio

SM

SAMPLE ID

Status Analyzed
EPA Sample Number BA-00049
QA Type Not QA
Lab Sample Number 270801090-0006

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 37 Number of Grid Openings (chrysotile) 37 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 803 L Sensitivity (amphibole) 9.97E-04 s/cc Sensitivity (chrysotile) 9.97E-04 s/cc

Recording Rules:

Min. AR Min length (um) Min width (um)
≥ 3:1 0.5 none

Stopping Rules:
 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
c	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)		
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td>·</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td>·</td></dl<></td></dl<>	<dl< td=""><td></td><td>·</td></dl<>		·		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	ь	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00049 270801090-0006 ISO 11-06-08 D.xls

FILE TYPE: Original

Recording Rules:

≥ 3:1 0.

Stopping Rules:

-	unit	ixules.	ocopping		
	•	Minimum Aspect Ratio	0.0024		
50		Minimum Length (um)	16		
ne		Minimum Width (um)			

10	Target Sensitivity GOs required to reach target sensitivity Maximum # of GOs						
50	Maximum # of Structure						
tion with retrieval							

16 Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing



Grid opening traverse direction:	V
ond opening daters direction.	•

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27	
Instrument	JEOL 100 CX (30)	
Voltage (KV)	100 kV	
Magnification	19,000 X	
Grid opening area (mm2)	0.0130	
Scale: 1L =	1.000	
Scale: 1D =	1.000	
Primary filter area (mm2)	385.0	
Secondary Filter Area (mm2)	360.0	
Category	Field 🔻	
Filter Status	Analyzed	

EPA Sample Number:	BA-00049	
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2).	803	
Date received by lab	10/21/2	800
Lab Job Number:	270801	090
Lab Sample Number:	270801090	-0006
Number of grids prepared	5	
Prepared by	K. Barr	ies
Preparation date	10/21/2	800
EPA COC Number	L1465	5

Analyzed by	R. Pescador	
Analysis date	11/6/200	3
Prep	Direct	•
in sample type = air, is mere loose material or debris in the cowl?	No	•
Counting rules	ISO (Air or Dust)	•
Grid storage location	2708-EMR-9	7, N
Archive filter(s) storage location	Westmor	ıt
English di Santan ing kabupatèn di Santan Santan Kabupatèn Kabupatèn Santan	0 000 000 70 -	
F- factor	1	
QA Type	Not QA	•

COMMENTS

EPA SAMPLE ID: BA-00049 LAB SAMPLE ID: 270801090-0006

Sample Type Air Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: L. Ramowski QA by: K. Lusher 12/1/2008 Data Entry date: 11/11/2008 QA date:

ns (a) (dentification	1 = yes, blank = r		Fract. GO
Width Identification	Sketch Photo I	Comments	Chrys.
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2	E3	ND	

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SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00060

Not QA 270801090-0007

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 608 L
Sensitivity (amphibole) 1.25E-03 s/cc
Sensitivity (chrysotile) 1.25E-03 s/cc

Recording Rules:

 Min. AR
 Min length (um)
 Min width (um)

 ≥ 3:1
 0.5
 none

Stopping Rules:
 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
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С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5	-	>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00060_270801090-0007_ISO_11-06-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27				
Instrument	JEOL 100 CX (30)				
Voltage (KV)	100 kV				
Magnification	19,000 X				
Grid opening area (mm2) 0.013					
Scale: 1L =	1.000				
Scale: 1D =	1.000				
Primary filter area (mm2)	385.0				
Secondary Filter Area (mm2)	360.0				
Category	Field 🔻				
Filter Status	Analyzed 🔻				

EPA Sample Number:	BA-00060					
Sample Type	Air	~				
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	608					
Date received by lab 10/21/2008						
Lab Job Number:	ab Job Number: 270801090					
Lab Sample Number:	270801090-0007					
Number of grids prepared 5						
Prepared by	K. Barr	nes				
Preparation date	10/21/2	800				
EPA COC Number L1465						

Analyzed by R. Pescador						
Analysis date	11/6/2008					
Prep	Direct	~				
ir sample type – air, is there loose material or debris in the cowl?	No	~				
Counting rules	ISO (Air or Dust)	•				
Grid storage location	ion 2708-EMR-97, O					
Archive filter(s) storage location Westmor						
Para (Karana turkan terah) (19 aki) Sebagkan (Karana)	### ***	**************************************				
F- factor						
QA Type	Not QA	•				

Recording Rules:

Stopping Rules:

110001	unit	i ituico.	Otopping i	tutou.
≥ 3:1	•	Minimum Aspect Ratio	(U.UUL 1	Target Sensitivity
0.5	0.50 Minimum Length (um)			GOs required to reach target sensitivity
non	e	Minimum Width (um)		Maximum # of GO\$
			50	Maximum # of Structure
F-fact	or C	alculation:	21	Estimated # of GO's

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

COMMENTS

EPA SAMPLE ID: BA-00060 LAB SAMPLE ID: 270801090-0007 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: QA date: K. Lusher 12/1/2008

Data En			11/11/200			and the company of th	QA date:	12/1/200	18			_				
Target Sensitivity Reached-Complete current GO, then stop.											·	,				
Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)				s, blank =		Fract. GO
Oria	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	13	ND		142.0		77.0 2.5	发表 主力條	47707	A TOTAL ST		15 W.A		77.00.05	57.44.75		10.54.1
1	15	ND			30 W. C.	美国	Alexander of the			Eliza Vi	80.5					April 1
11	17	ND			200	100				(A. C.	84. A.Y		\$4, 199. st			
1	19	ND	tifi, qizin	10.4			4.4		10000	200	4.415		9-3-4		17.9	100
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1	H6	ND	7 April 5"	14.25.75			A				\$2,000		Post Contract			A SHOW THE
1	H8	ND	4-44-7	100	100			SMERT !	36.00	Market 1	100		100	4,000		1 6.30.00= 4
1	G1	ND			HEAT PARS	10.00										Constitution of
11	G3	ND	2 m 1986	27 10 10 10 10	100	ASS.			14.00	100	- 4		6.0	775	1,000	
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1	G7	ND		100	2 (44)			20.00	1500	100	0.00					
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1	F6	ND		Tree State (C)					188 (188	40.0	10.00		4.0			***
1	F8	ND	E8 -0.250		11 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			10.00	Park B	(A) 1.7	-3818		2000	Secret Co.		Property of
11	F10	ND	*v - 64:			100			42940		S. Herri					
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1	E5_	ND	Company	Allered Product	7 (1)	Part Shared					30000			***	4	
1	E7	ND		40.00				1000		4502.00	0.80					
1	E9	ND	(S) 104 (198			100			3.0	4.C. (S)		The property of the second	4,000	100		Carrier.
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2	G2	ND	4.5	100				100		9000	1000		ALC: N	200	A HEAVY	
2	G6	ND	C 0.0		10000						2.00		Section 1	100188977,82		
2	F1	ND											162 200		*	
	1 1 1	LIND	Seal Control of the	United States	THE RESERVE	五二四十五年 1877年 187	THE PERSON NAMED IN			45 Z 25 A 25	Designation of the last of the		10 mm + 50 mm	はの数は数に関		西部的国家的

2	F3	ND	
2	E2	ND	
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2	D1	ND	

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Versi

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

PARAMETERS

Status Analyzed **EPA Sample Number** BA-00069 QA Type

Not QA 270801090-0008

Lab Sample Number Sample Type Air Blank Category Prep

SAMPLE ID

Direct Counting Rules 10312 Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 8

Number of Grid Openings (chrysotile) 8 Grid opening area

0.0130 mm2 Volume (L) or Area (cm2) 0 L Sensitivity (amphibole) Blank s/cc Sensitivity (chrysotile) Blank s/cc

Recording Min. AR Min length (um) | Min width (um) Rules: ≥ 3:1 0.5 none

Stopping Rules:

Target S Max GOs Max N 8 50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b.	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00069_270801090-0008_ISO_11-06-08_D.xls

12/1/2008, 2:22 PM

FILE NAME: BA-00069 270801090-0008 ISO 11-06-08 D.xls

FILE TYPE: Original

Stopping Rules:

Recording Rules: ≥ 3:1 Minimum Aspect Ratio 0.50 Minimum Length (um) none Minimum Width (um)

io		Target Sensitivity
)	10	GOs required to reach target sensitivity
	8	Maximum # of GOs
	50	Maximum # of Structur
	8 8	Estimated # of GOs

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category Blank			
Filter Status	Analyzed 🔻		

EPA Sample Number:	BA-000	BA-00069		
Sample Type	Air	•		
Air volume (L), oust sample area (cm2), or dustfall container area (cm2).				
Date received by lab	10/21/2008			
Lab Job Number:	270801090			
Lab Sample Number:	27080109	0-0008		
Number of grids prepared	5			
Prepared by K. Barne				
Preparation date	ration date 10/21/2008			
EPA COC Number L14655				

Analyzed by	R. Pescador		
Analysis date	11/6/2008		
Prep	Direct		
ir sample type – air, is there foose material or debris in the cowl?	No 🔻		
Counting rules	ISO (Air or Dust)		
Grid storage location	2708-EMR-97, P		
Archive filter(s) storage location	Westmont		
Transcription (1994)			
F- factor	1		
QA Type	Not QA		

Indirect Prep Inputs

F-factor Calculation:

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK
OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: K. Lusher QA date: 12/1/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Griu	Opening	Type	Primary	Total	Length	Width	dentinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	G3	ND	The second second	44		Libert.	2000年	10.00	200	35.34	C10 10		27 2 323	-277		10 A 10
1	G5	ND	(4)				100 400		1.00	200	4.4	a a la saltan i a saltan				profession and
1	G7	ND			4.7		38 2 3 3 h	72	375	15.5 45	1874		48.5			
1	G9	ND		が	440	3.5		15 18 Fig.		10.7	10.7		3			
2	11	ND			15544		1144.76	A 100			7.5		25/82		WAR III	
2	13	ND	2000		30000000000000000000000000000000000000	23.30			3457	F.2.9	3.5					
2	15	ND	100	HOUSE	基本设施		TO THE RESIDENCE	7935		3.77	72 H					
2	17	ND	\$2.00 (A)	10 THE	\$30,500	# * K		287.00		437	1 860	Secretary and the second	day in the	40.00	A - 20 3 34	

_ISO_12-01-08_IC/R5/48-1

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Status

QA Type

Analyzed BA-00005

RS

270801090-0001

Lab Sample Number27080°Sample TypeAirCategoryFieldPrepDirectCounting Rules10312

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00

Indirect factor 1.00E+00

Number of Grid Openings (amphibole) 13

Number of Grid Openings (chrysotile) 13

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 1028 L

Sensitivity (amphibole) 2.22E-03 s/cc Sensitivity (chrysotile) 2.22E-03 s/cc

Recording Rules:

Min. AR Min length (um) Min width (um)
≥ 3:1 0.5 none

Stopping Rules:
 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Ol I.	01/	01/	01/		

Check OK OK OK

Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
a	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<≃.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00005_270801090-0001_ISO_12-01-08_DRS.xls

12/3/2008, 4:13 PM

SA

FILE NAME: |BA-00005_270801090-0001_ISO_12-01-08_DRS.xls

Recording Rules:

Stopping Rules:

		-	
≥ 3:1	•	Minimum Aspect Ratio	0.0024
0.50		Minimum Length (um)	13
none		Minimum Width (um)	

Target Sensitivity GOs required to reach target sensitivity Maximum # of GOs Maximum # of Structure

Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction: ٧

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27	E
Instrument	JEOL 100 CX II (27-2)	5
Voltage (KV)	100 kV	(
Magnification	19,000 X	1
Grid opening area (mm2)	0.0130	Ė
Scale: 1L=	1.000	L
Scale: 1D =	1.000	ı
Primary filter area (mm2)	385.0	£
Secondary Filter Area (mm2)	360.0	F
Category	Field	E
Filter Status	Analyzed 🔻	_

EPA Sample Number:	BA-00005					
Sample Type	Air	~				
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1028	}				
Date received by lab	10/21/2	800				
Lab Job Number:	270801090					
Lab Sample Number:	270801090	0-0001				
Number of grids prepared	5					
Prepared by	K. Barr	nes				
Preparation date	10/21/2	800				
EPA COC Number	L1465	55				

Analyzed by	R. Pescador					
Analysis date	12/1/2008					
Prep	Direct					
loose material or debris in the	No 🔻					
Counting rules	ISO (Air or Dust)					
Grid storage location	2708-EMR-97, I					
Archive filter(s) storage location	Westmont					
karing propagation (C. 15). Seld (C. 16) is a constant	bite ωπ. i.					
F- factor	1					
QA Type	Recount Same					

COMMENTS

ERROR CHECK EPA SAMPLE ID: BA-00005 Sample Type Air Prep Direct LAB SAMPLE ID: 270801090-0001 Count Rule 10312 QA Type RS OK - No errors found

K. Lusher Data Entry by: L. Ramowski QA by: Data Entry date: 12/2/2008 QA date: Target Sensitivity Reached-Complete current GO, then stop. 12/3/2008

arat got c				Current G			(1) on 11 to 36 36 = 1 40 April 16 17 1 1 1 1 1					1				T=
Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)			1 = ye	Fract. GO		
L	Opening	Type	Primary	Total	Length	Width	Tuo; itainoatioi i	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	17-17-15			100 m	27		1400	10 mg		The state of the s	CHOM	(14.8)	70/117	
1	J4	ND				5. 计数			100					4		
1	J6	ND	经数据			7 K 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sec. 15 17 17 14			1.00	42.2				44	
1	J8	ND	有型数数		- Table	100	to a new	3 7-1-1			Sec.	State of the state	t break.		4470	estation and the
1	J10	ND		4.00	Salar.	19613	100									
1	11	ND			to the second	1.00		機能をグ	975.0	#6 #4		A Commence of the Commence of	4.1			3715
1	13	ND			77.00 t	44.6	376.4		19-34	1	有数数				78.75	See the
2	J1	ND				100	Carrier Street				236	Contract of the second	1. 107.			
2	J3	ND			4.765				1.46	透過			1			
2	J5	ND	-2519475		St. 24-24-24-2	250	250 F 27 M 13		**	11572		能表现。	1.00	* *		100
2	J7	ND	440			4.76	The second	* 17.7	15.00		7.00			100		建筑等 。
2	J9	ND	40.00		14.5	3.99	1200	\$41 m	17 31 22	1312	\$2500	Production of the second		100	ALC: N	
2	12	ND	77.00		新生物影響		e front of the	100	如此为		100				4700	7.00

≥ 5:1

0.5

None

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	38J 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00005					
Sample Type (A=Air, D=Dust, DF = Dustfatl):	A					
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1028					
Date received by lab	10/21/08					
Lab Job Number:	270801090					
Lab Sample Number:	270801090-0001					
Number of grids prepared	5					
Prepared by	K. Barnes					
Preparation date	10/21/08					
EPA COC Number:	L14655					
Secondary filter pore size (um)	0.2					

R. Pescador
11/ 6 /2008
D
No
ISO
2708-EMR-97, I
Westmont
Not QA

Stopping Rules: 0,000 Target Sensitivity: 0.0001--20 iB Max # of GOs: Target # of Structures: 50

Recording Rules:

none

Minimum Length (um):

Minimum Width (um);

Minimum Aspect Ratio (circle one):

€3y1

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

(uiii)		0.	8	J					.2	J							
Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class ((see belo	ow)	Sketch/ Comments	1 = y	es, blank :	= no	Fract.	F-factor Calculation:
Gila	Gird Opening	Туре	Primary	Total	Length	Width	dentification	LA	OA	С	NAM	Sketch Comments	Sketch	Sketch Photo EDS		Chrys.	Indirect Prep Inputs
	JZ	ND															Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	J4	NO															First resuspension volume or rinsate volume (mL)
	16	No															Volume applied to secondary filter (ml.) or used for serial dilution
	J8	NO															Inputs for Serial Dilutions
	110	NO															Second resuspension volume (mL)
	I(ND											•				Volume applied to secondary filter (mL) or used for serial dilution
	I3	NO															Third resuspension volume (mL)
	IV	NO															Volume applied to secondary filter (mL)
	I 7	NO															Input for Ashing of Secondary Filter
+	ID	NO															Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

Horizontal (V) Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00005
 QA TYPE
 LAB JOB NUMBER
 270801090

 LAB SAMPLE NO.
 270801090-0001
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-97, I

Γ	Т											-				
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	l Class	T		1 = ye	Fract. GO		
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
i	F2	ND	4	_												
	FY	NO								,						
	F6	ND														
	FR	ND														
<u> </u>	FIO	ND							-							
2	ال	ND														
	J3	ND														
	12	ND														
	J7	ND													~	
	19	NO														
	1 2	NO							·							
	1 4	No														
	J6	Np														
	I8_	ND														
1	TIO	NO _														

Α

LAB NAME EMSL27 LAB SAMPLE NO. 270801090-0001 EPA SAMPLE NO. BA-00005 SAMPLE TYPE

QA TYPE Not QA

LAB JOB NUMBER 270801090 GRID STORAGE LOC. 2708-EMR-97, I

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	s, blank	≃ no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA_	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
a	<u>C3</u>	ND				i .										
1	CS	ND														
	07	NO														
	co	No				1,007										
	,	, v							,							
															j	
			Pho													
			ey Dille (of													
			13													
				1												
					1											

6.0024

-82 14

0.0001

50

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

Grid Opening

No. of Structures

Primary Total

EPA Sample Number:	BA-00015
Sample Type (A=Air, D=Dust, DF = Dustfall):	A A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	938
Date received by lab	10/21/08
Lab Job Number:	270801090
Lab Sample Number:	270801090-0002
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/21/08
EPA COC Number:	L14655
Secondary filter pore size (um)	0.2

Identification

Analyzed by	R. Pescador
Analysis date	11/6/2008
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA
•	

Sketch/ Comments

Target Sensitivity: Max # of GOs: F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right---> Target # of Structures:

Recording Rules:						
Minimum Aspect Ratio (circle one):						
none	3	≥ 5:1	ŀ			
Minimum Leng	Minimum Length (um): 0,5					
Minimum Widt	h (um):	None	1			
			1			
L						

Stopping Rules:

				.					
1 = yes, blank = no			Fract. GO	F-factor Calculation:					
Sketch	Photo	EDS	Chrys.	Indirect Prep Inputs					
				Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]					
				First resuspension volume or rinsate volume (mL)					
				Volume applied to secondary filter (mL) or used for serial dilution					
н		*		Inputs for Serial Dilutions					
				Second resuspension volume (mL)					
				Volume applied to secondary filter (mL) or used for serial dilution					
				Third resuspension volume (mL)					
				Volume applied to secondary filter (mL)					
				Input for Ashing of Secondary Filter					

	1		1 1111017	 20119			-	 1 11 111	 Ottotost	 	
1	II	ND							*		
1	I3	ND									
	12	ND									
	I	NO								×	
	I 9	NO									
	H2	ND									
	44	ND			, i						
	46	No									
	1	MD									
4	H10	NO									-

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length Width

C = Chrysotile

Mineral Class (see below)

NAM

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) es No If No, explain:



Fraction of secondary filter used for

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00015
 QA TYPE
 LAB JOB NUMBER
 270801090

 LAB SAMPLE NO.
 270801090-0002
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-97, J

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = yes, blank = no		= no	Fract. GO	
Ond.	Opening	Туре	Primary	Total	Length	Width	idonanozaon	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	GI	No.										·				
	63	No														
	G5	ND								¥						
	G 7	NO														
	Gg	NO	<u></u>													
	FZ	No	,													
	FØ	ND														
	F6	ND														
	Fg	NO														
	Fie	NO														
2	JI	No														
	J3	40										·				
	J5	No														
	17	NO														
1	J9	No							,							

JOMAY WYATT-PESCADOR 406-293-9066 EMSL ANALYTICAL, INC. 107 WEST 4TH STREET, LIBBY MT 59923

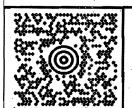
25 LBS

1 OF 1

SHIP TO:

CHARLES LACERRA 856-858-4800 1253 EMSL ANALYTICAL, INC. 107 HADDON AVENUE

WESTMONT NJ 08108-2711



NJ 081 9-06

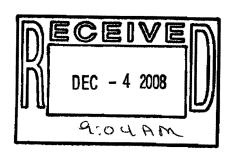
UPS GROUND

TRACKING #: 1Z Y84 048 03 9389 9115



BILLING: P/P





Page 1 of 1

EMSL Analytical, Inc.

107 Haddon Avenue

Westmont, New Jersey 08108

Phone: (856) 858-4800 Fax: (856) 858-9551



LETTER OF TRANSMITTAL

To:	Scott Carney		Date:	Decemb	er 15, 2008			
•	EMR, Inc.		From:	Charles	E. LaCerra			
	11 East Superior Street		Re:	Libby, N	AT BNSF Work			
	Suite 260			Mobile 1	Lab Analytical Reports			
,	Duluth, MN 55802			See Belo	DW			
· -	Phone: 763-277-5200							
We are sen	ıding you: × Atta	ached		Under se	parate cover via			
	Solicitation	□ Сору	of Letter		Invoice #'s See Below			
	Subcontract	As no	oted		Other			
	Laboratory Samples	Analy	tical Repor	ts	•			
	These are transmitted as indicated below: Execute Original(s) Review & Comment For Approval							
	ReturnOrginal(s)	As Re	equested		Respond as instructed			
	For Your Information/File				Other			
Remarks:								
	lease find one (1) copy of and use for the above re			e lab anal	ytical reports for analysis for			
270801085								
Please feel	free to contact me with a	ny questior	ns or if you	u require a	additional information			
Copy to: _			Signed:	: Char	ludalina			

INTERNAL CHAIN OF CUSTODY

10/20/2008 2:34:37 PM

Order ID: 270801085

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

L14650

Samples collected 9/17, 18, 19, 23/2008

Customer ID:

Customer PO:

EMRI78

Received:

10/20/08 12:21 PM

270801085

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID**

EMSL Order:

Invoice to Burlington N. Santa Fe/BNSF Rlwy (BURL54), 2500 Lou Menk Drive, Fort Worth, TX 76131

16 Test: **TEM ISO 10312** Air TAT: 3 weeks Qty: **Matrix** iwyattpescador Date: 10/20/2008 **Acct Sts:** Sisprsn: epodell Logged: Sample ☑ Acceptable BillingFrequency: With Report Condition: ☐ Unacceptable Comments ☐ Exempt from prep charge Date: <u>{U</u> ☐ Exempt from lab opening fee Prepped: Analyzed: Date: . ☐ Exempt from layer/aliquot charges Date: Data Entry: Date: Screened: Mailed: Date:

Special Instructions Prehamapyreview C

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801085	270801085-0001	BA-00006 •		11/10/2008 12:21:00 P
270801085	270801085-0002	BA-00007 •		11/10/2008 12:21:00 P
270801085	270801085-0003	BA-00008 •		11/10/2008 12:21:00 P
270801085	270801085-0004	BA-00009 •		11/10/2008 12:21:00 P
270801085	270801085-0005	BA-00010 •		11/10/2008 12:21:00 P
270801085	270801085-0006	BA-00016 •		11/10/2008 12:21:00 P
270801085	270801085-0007	BA-00017 •		11/10/2008 12:21:00 P
270801085	270801085-0008	BA-00018 •		11/10/2008 12:21:00 P
270801085	270801085-0009	BA-00019 *		11/10/2008 12:21:00 P
270801085	270801085-0010	BA-00020 •		11/10/2008 12:21:00 P
270801085	270801085-0011	BA-00026 · RS	RS LB	11/10/2008 12:21:00 P

EMSL Analytical, Inc., 107 West 4th Street, Libby, MT 59923

INTERNAL CHAIN OF CUSTODY

10/20/2008 2:34:37 PM

Order ID: 270801085

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Samples collected 9/17, 18, 19, 23/2008

Suite 260

Duluth, MN 55802

(218) 625-2337

L14650

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

270801085

EMRI78

BNSF Libby, MT 2008

10/20/08 12:21 PM

Cust COC ID

Invoice to Burlington N. Santa Fe/BNSF Rlwy (BURL54), 2500 Lou Menk Drive, Fort Worth, TX 76131

270801085	270801085-0012	BA-00027 •	,	11/10/2008 12:21:00 P
270801085	270801085-0013	BA-00028 •		11/10/2008 12:21:00 P
270801085	270801085-0014	BA-00034 •		11/10/2008 12:21:00 P
270801085	270801085-0015	BA-00035 •		11/10/2008 12:21:00 P
270801085	270801085-0016	BA-00036	Archive	11/10/2008 12:21:00 P

SAMPLE ID

Status

QA Type

Analyzed BA-00006

Air

Field

Direct

Not QA 270801085-0001

Sample Type Category Prep Counting Rules

EPA Sample Number

Lab Sample Number

Recording

Rules:

10312 Min. AR Min length (um) **PARAMETERS**

Grid opening area

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

Effective filter area Indirect factor Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

1.00E+00 7

0.0130 mm2

385.0 mm2

1778 L 2.38E-03 s/cc

2.38E-03 s/cc

Min width (um) ≥ 3:1 0.5 none

Stopping Rules:

Target S Max GOs Max N 0.0024 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

OK OK Check OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td>,</td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td>,</td></dl<></td></dl<>	<dl< td=""><td></td><td>,</td></dl<>		,
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	a			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00006 270801085-0001 ISO 10-31-08 D.xls

11/4/2008, 9:41 AM

FILE NAME: BA-00006 270801085-0001 ISO 10-31-08 D.xls

FILE TYPE: Original

Recording Rules:

2 3:1 ▼

none

Stopping Rules:

Estimated # of GOs

,	Minimum Aspect Ratio	0.00-	Target Sensitivity
	Minimum Length (um)		GOs required to reach target sensitivity
	Minimum Width (um)		Maximum # of GOs
		50	Maximum # of Structure

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27	E
Instrument	JEOL 100 (49)		s
Voltage (KV)	100 k	v	Ai (c (c
Magnification	19,000	1 1	D.
Grid opening area (mm2)	0.013	0	Lá
Scale: 1L =	1.000	$\neg \neg \lceil$	Lá
Scale: 1D =	1,000		N
Primary filter area (mm2)	385.0		P
Secondary Filter Area (mm2)	360.0		P
Category Field		•	E
Filter Status	Analyzed	•	

EPA Sample Number:	BA-00006		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1778		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-0001		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/20/2008		
EPA COC Number	L1465	0	

Analyzed by	R. Mahoney			
Analysis date	10/31/2008			
Prep	Direct	•		
If sample type – air, is mere loose material or debris in the cowl?	No	_		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, M			
Archive filter(s) storage location	Westmont			
着機(ではなりをいくいね)という。 We the Selfs (である) Test We で Test (アファン)				
F- factor	1.3			
QA Type	Not QA	•		

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID: BA-00006 270801085-0001 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

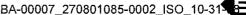
ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Data Entry date: 11/3/2008 QA date: Target Sensitivity Reached-Complete current GO, then stop.

. 4. 900.			O O I I PI O CO		.,	35.00	The Down Charles and a facility with									
Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification	_	Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	B5	ND						Arrest.		14 354	200		4672/41	0.00	10.75	14 (14 A)
1	B8	ND							100	SEEDE	#####		Tree (ST	4500		
1	D3	ND					Barga (Circle)		145		作为者 为			10.00	1000	
1	D5	ND			4000				\$ 12.5	1000	3070	Manager Committee of the	et status	4.4	1	
2	G3	ND							23.46	# ex 10 h	(### E)	AND COLUMN	44,854	2002 Cg	1	and the second
2	G5	ND							17.44		1000		7. A. W. W.		N. Water	434.4
2	G7	ND		STATE OF THE		77.5	75-27	ting programme	15.00	100	24.0		10.00	10.00	100	



BA-00007_270801085-0002_ISO_10-31 Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed **EPA Sample Number** BA-00007 Not QA QA Type

Lab Sample Number

Sample Type Air Field Category Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 7

Number of Grid Openings (chrysotile) 7 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 1763 L Sensitivity (amphibole) 2.40E-03 s/cc 2.40E-03 s/cc Sensitivity (chrysotile)

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801085-0002

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

a 0 0	0		
h 0 0	0		l .
		ı	
c 0 0	0		
d 0 0	0		
e 0 0	0		
f 0 0	0		
Total 0 0	0	0	0

Check OK OK ОК

OK Grand total

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
e	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00007 270801085-0002 ISO 10-31-08 D.xls

11/4/2008, 9:54 AM

FILE NAME: BA-00007_270801085-0002_ISO_10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27	
Instrument	JEOL 100 CX II (49)	
Voltage (KV)	100 kV	
Magnification	19,000 X	
Grid opening area (mm2)	0.0130	
Scale: 1L =	1,000	
Scale: 1D =	1.000	
Primary filter area (mm2)	385.0	
Secondary Filter Area (mm2)	360.0	
Category	Field 🔻	
Filter Status	Analyzed T	

COMMENTS

EPA Sample Number:	BA-00007		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1763		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-000		
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	800	
EPA COC Number	L1465	50	
	L		

Analyzed by	R. Mahoney		
Analysis date	10/31/2008		
Prep	Direct	•	
ir sample type – air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-96, N		
Archive filter(s) storage location	Westmon	t	
A Photosia and Coursella medicina dia analysi Santa Carle Trans Production (1986)			
F- factor	1		
QA Type	Not QA	•	

Recording Rules:

≥ 3:1

Stonning Rules:

CCUI	anne	ixules.	Stopping I	uies.
3:1	▼	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)	4 3 5 2 5 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	GOs required to reach target sensitivity
non	ie	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
			7	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00007

LAB SAMPLE ID: 270801085-0002

Sample Type Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: QA date:

T. Peters 11/4/2008

Target Sensitivity Reached-Complete current GO, the	

Grid	Grid	Structure	No. of S	Structures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye:	s, blank =	= no	Fract. GO
Ond	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	C4	ND	44.7430				*12.80 (* 1464.)	种种类的	100 STATE	10 , 00%	100		14 3 (15.0)	(#X)4(4)	41.14.8	
1	C6	ND			100			3400X	0.704	4.00	# 384.5				7. 5. 0	
1	C8	ND	\mathcal{D}_{i}	400		7.4			2.60.70.	19.40	ALC: T			100	计算特数	
1	E8	ND	100	100	44	HAPPER	Steam of Sept.		500 ar					0.000	Hite &	A Comment
2	C4	ND		10 14 15	A SECTION			建			Sets:		100	4.40	Mark.	
2	C6	ND					100		400				270	areas.	4.77	1.00
2	C8	ND		14-27	# 1 A A A		en en			300	1000		100	* 13.7	1.0215	



SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00008 Not QA

QA Type Not QA
Lab Sample Number 270801085-0003
Sample Type Air

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 6
Number of Grid Openings (chrysotile) 6

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 2440 L
Sensitivity (amphibole) 2.02E-03 s/cc
Sensitivity (chrysotile) 2.02E-03 s/cc

Recording
Rules:Min. ARMin length (um)Min width (um)≥ 3:10.5none

Stopping Rules:
 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00008 270801085-0003 ISO 10-31-08 D.xls

11/4/2008, 9:56 AM

FILE NAME: BA-00008 270801085-0003 ISO 10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27						
Instrument	JEOL 100 CX II (49)						
Voltage (KV) 100 kV							
Magnification 19,000 X							
Grid opening area (mm2) 0.0130							
Scale: 1L = 1.000							
Scale: 1D =	1.000						
Primary filter area (mm2)	385.0						
Secondary Filter Area (mm2)	360.0						
Category	Field						
Filter Status	Analyzed 🔻						

COMMENTS

EPA Sample Number:	BA-000	80				
Sample Type	Air	•				
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	2440	1				
Date received by lab	10/20/2	800				
Lab Job Number: 27080108						
Lab Sample Number:	27080108	5-0003				
Number of grids prepared	5					
Prepared by	K. Barnes					
Preparation date 10/20/200						
EPA COC Number L14650						

Analyzed by	R. Mahoney			
Analysis date	10/31/200	8		
Prep	Direct	•		
If sample type – air, is there loose material or debris in the cowl?	No	~		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-9	6, O		
Archive filter(s) storage location	Westmon	t		
F-factor				
QA Type	Not QA	•		

Recording Rules:

Stanning Bulger

Recor	aine	Rules:	Stopping F	tules:			
≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity			
0.5	0	Minimum Length (um)	C C	GOs required to reach target sensitivity			
nor	e	Minimum Width (um)		Maximum # of GOs			
			50	Maximum # of Structure			
F-fact	or C	alculation:	6	Estimated # of GOs			

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

EPA SAMPLE ID: LAB SAMPLE ID: BA-00008 270801085-0003 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T .Peters
QA date: 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

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Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	H4	ND		1- 9 76 (2007)	de johge			第43年9	trace of	100			10.00			Name of States
1	H6	ND	44,676				ASSESSMENT OF	A N.		9.27	6			17.4	400 June	A 10 4 5
1	H8	ND	(20 pt 20)		4 4 15	8.0	50 PM 10 TO	Section Sec		\$500 E	100				100	
2	C3	ND				45	98 0 0 C 4 C 4 C	4 00 (300)		100	22.4		(4.24. AC)	2000		
2	C5	ND	30.00				100			Description Supplied	1					
2	C7	ND	****	Spanish Ser	100000		and the second			1000						t de la compa



SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00009

QA Type Not QA Lab Sample Number 270801085-0004

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 6
Number of Grid Openings (chrysotile) 6

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 2402 L
Sensitivity (amphibole) 2.05E-03 s/cc
Sensitivity (chrysotile) 2.05E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK	•	

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

	\ - /				
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
e	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00009 270801085-0004 ISO 10-31-08 D.xls

11/4/2008, 9:57 AM

SM

FILE NAME: BA-00009 270801085-0004 ISO 10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voitage (KV)	100 KV
Magnification	19,000 X
Grid opening area (mm2)	0.0130
Scale: 1L =	1.000
Scale: 1D =	1.000
Primary filter area (mm2)	385.0
Secondary Filter Area (mm2)	360.0
Category	Field
Filter Status	Analyzed 🔻

EPA Sample Number:	BA-00009		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	2402.	0	
Date received by lab	10/20/2	800	
Lab Job Number:	270801	085	
Lab Sample Number:	27080108	5-0004	
Number of grids prepared	. 5		
Prepared by	K. Barr	ies	
Preparation date	10/20/2	800	
EPA COC Number	L1465	0	

Archive filter(s) storage location	Westmont		
Grid storage location	2708-EMR-96, P		
Counting rules	ISO (Air or Dust)	•	
If sample type – air, is there loose material or debris in the cowl?	No	•	
Prep	Direct	•	
Analysis date	10/31/200	8	
Analyzed by	R. Mahoney		

Recording Rules:

Stopping Rules:

11000.	unis	114100)	Otopping i	tuiou.
≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0.50 Minimum Length (um)		6	GOs required to reach target sensitivity
nor	none Minimum Width (um)			Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	6.	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID: BA-00009 270801085-0004 Sample Type Air Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

				Out Other	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1									
Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	class (b)		,	1 = ye	s, blank	= no	Fract. GO
Gnd	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	A3	ND	Access (A)	501 1988E	403346		可以并补 5分	AL THE	7.0	2012	bette.		of the second	77.550	our cas	
1	A5	ND	Maria Property						714,4430	49.5						
1	B4	ND	4-16-6	1 - 10 March	A CONTRACTOR	物种种类	18. S. T	SEP 1	\$ 14 E	200			10.00	3.3		
2	A4	ND	-1.00	15 to 102.5			uni della di sensa di se		A Market				100		in fine	
2	A7	ND	records.			100	300 22.00	183		de se	10 PAY 1		Art Sec.		1420	
2	C7	ND	100							Per est			1007	100		



385.0 mm2

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Effective filter area

Status Analyzed
EPA Sample Number BA-00010
QA Type Not QA
Lab Sample Number 270801085-0005

Indirect factor 1.00E+00

Number of Grid Openings (amphibole) 10

Number of Grid Openings (chrysotile) 10

Lab Sample Number Sample Type

Grid opening area 0.0130 mm2

Sample Type Air
Category Blank
Prep Direct
Counting Rules 10312

Volume (L) or Area (cm2) 0 L
Sensitivity (amphibole) Blank s/cc
Sensitivity (chrysotile) Blank s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

S	tc	p	p	in	g
	R	ul	e.	s:	

Target S	Max GOs	Max N		
	10	50		

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	o	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	Total 0		0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin Length		Width	Aspect ratio	
LA = Libby-type amphibole	а			<5	
OA = Other amphibole	b <.5			>= 5	
C = Chrysotile	С		>.5	>= 5	
	d	>=.5 to < 5	<=.5	>= 5	
	е	5 to 10	<=.5	>= 5	
	f	>10	<=.5	>= 5	

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00010_270801085-0005 ISO 10-31-08 D.xls

11/4/2008, 9:58 AM

FILE NAME: BA-00010 270801085-0005 ISO 10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100 kV
Magnification	19,000 X
Grid opening area (mm2)	0.0130
Scale: 1L =	1.000
Scale: 1D =	1.000
Primary filter area (mm2)	385.0
Secondary Filter Area (mm2)	360.0
Category	Blank
Filter Status	Analyzed 🔻

COMMENTS

EPA Sample Number:	BA-00010			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)				
Date received by lab	10/20/2008			
Lab Job Number:	270801085			
Lab Sample Number:	27080108	5-0005		
Number of grids prepared	5			
Prepared by	K. Barr	ies		
Preparation date	10/20/2	800		
EPA COC Number	L14650			

Analyzed by	R. Mahoney			
Analysis date	10/31/200	8		
Prep	Direct	•		
ir sample type – air, is there loose material or debris in the	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-9	6, Q		
Archive filter(s) storage location	Westmon	t		
Probation and the second second	K, tile Melaphy			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

Troop and ration				Otopping Ituics:				
	≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity			
	0.5	0	Minimum Length (um)	33 4 77 3335 7	GOs required to reach target sensitivity			
	none		Minimum Width (um)	10	Maximum # of GOs			
				50	Maximum # of Structure			
				10	Estimated # of GOs			

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00010 LAB SAMPLE ID: 270801085-0005

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

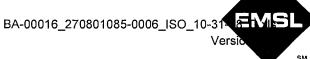
ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Maximum # of Grid O			

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	(a) Identification		Apptification Mineral Class (b)			1 = yes, blank = no			Fract. GO	
Gild	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	D2		en en en en	**************************************	########		ter to the		ALC: U	4.86					77.677	
1	D4	ND			200 T				13/11/2	1000	-7836	take the state of the state of		100		927 (1)
1	D6	ND					Service Co	100 pt	400	14.4	A 274		**	1200	经技術	7.5
1	D8	ND					Property Congress	494.5	100	150	70.4				17:54	
1	D10	ND	100		4 (144)		30-10-10			HEE	30.53			21.0		
2	D2	ND	100						2000	Section.	40.0			42.464		3 7 (1)
2	D4	ND	1				\$260 PERSONS		. * # # * * * * * * * * * * * * * * * *	1000	- 13		1	29.43		41.50 m
2	D6	ND	100					Desire.	4.000		建 排作		3.00	*	(C-1040)	
2	D8						建筑30000	1376	114	2,000					1	
2	D10	ND	AGE COMES	66993344			A PAGE TO SECURE	Harry Mary	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	100	100					0.74 4, 174



SAMPLE ID

PARAMETERS

Status EPA Sample Number QA Type

Analyzed BA-00016

Not QA 270801085-0006

Lab Sample Number Sample Type

Air Field Direct

10312

Effective filter area Indirect factor

1.00E+00 Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile)

5 Grid opening area 0.0130 mm2 Volume (L) or Area (cm2)

Sensitivity (amphibole)

2675 L 2.21E-03 s/cc

385.0 mm2

5

Sensitivity (chrysotile) 2.21E-03 s/cc

Recording Rules:

Counting Rules

Category

Prep

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK	•	

Check OK OK Grand total OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00016 270801085-0006 ISO 10-31-08 D.xls

11/4/2008, 10:00 AM

FILE NAME: BA-00016 270801085-0006 ISO 10-31-08 D.xls

FILE TYPE: Original

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BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX I (49)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1,000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field			
Filter Status	Analyzed 🔻			

COMMENTS

EPA Sample Number:	BA-00016		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	2675		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085	5-0006	
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/20/20	800	
EPA COC Number	L14650		

4				
Analyzed by	R. Mahoney			
Analysis date	10/31/2008			
Prep	Direct	•		
loose material or debris in the	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, R			
Archive filter(s) storage location	Westmon	t		
	5.20 (1.20)			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

110001	41110	Trained.	Otopping Haits.					
≥ 3:1	•	Minimum Aspect Ratio	0.00,	Target Sensitivity				
0.5	0.50 Minimum Length (um)		E	GOs required to reach target sensitivity				
nor	ne	Minimum Width (um)		Maximum # of GOs				
			50	Maximum # of Structure				
□ fast	~ · ·	-1	5	Estimated # of GOs				

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00016 270801085-0006 Sample Type Air
Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

新工业会员。4. A. L. T. A. V. L. P.	THE REPORT OF STREET AND STREET	kilistatus (1900) tuni ee elikustaa kakkili, e 💷 🖳	国的特殊的 100 mm (100 mm)
Target Sensitivit	v Reached-Com	niete current GU	then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	B2	ND	Alexander (France)	75 LES	Total Confession			*****	1000	Market S	With an	Or service relative to the	0.00			354304
1	B6	ND	To be the		100		gent en sold				a de la composición dela composición de la composición dela composición de la composición de la composición dela composición de la composición de la composición de la composición dela composición de la composición de la composición de la composic			576		residence.
1	B8	ND					100				*			75.00	100	7.02.745
2	H4	ND		Pro Principle			100 100 100		State or a		16 a.	and the second second	est transfer	100		96 (A. 1884)
2	H6	ND		de la constant		A STATE OF	*		6.152		4000			27.36		4 T. S.

SAMPLE ID

Status

QA Type

Analyzed BA-00017

Not QA

Lab Sample Number Sample Type

EPA Sample Number

270801085-0007 Air

Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area Indirect factor

385.0 mm2

1.00E+00 5

Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

5

Grid opening area

0.0130 mm2 2675 L

Volume (L) or Area (cm2) 2675 L Sensitivity (amphibole) 2.21E-03 s/cc Sensitivity (chrysotile) 2.21E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	ОК	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio		
LA = Libby-type amphibole	а			<5		
OA = Other amphibole	b	<.5		>= 5		
C = Chrysotile	С		>.5	>= 5		
	d	>=.5 to < 5	<=.5	>= 5		
	е	5 to 10	<=.5	>= 5		
	f	>10	<=.5	>= 5		

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00017 270801085-0007 ISO 10-31-08 D.xls

11/4/2008, 10:01 AM

SM

FILE NAME: BA-00017 270801085-0007 ISO 10-31-08 D.xls

FILE TYPE: Original

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	Γ						
0.50		Minimum Length (um)	2000						
none		Minimum Width (um)							

io	0.0024	Target Sensitivity
)	5	GOs required to reach target sensitivity
		Maximum # of GOs
	50	Maximum # of Structure

Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

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BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Air

BA-00017

2675.0

10/20/2008

270801085

270801085-0007

K. Barnes

10/20/2008

L14650

Laboratory name:	EMSL	27	EPA Sample Number:
Instrument	JEOL 100 (49)		Sample Type
Voltage (KV)	100 kV		Air volume (L), dust sample area (cm2), or dustfall container area (cm2)
Magnification	19,000	х	Date received by lab
Grid opening area (mm2)	0.013	30	Lab Job Number:
Scale: 1L =	1.00	0	Lab Sample Number:
Scale: 1D =	1,00	0	Number of grids prepared
Primary filter area (mm2)	385.	0	Prepared by
Secondary Filter Area (mm2)	360.	0	Preparation date
Category	Field	_	EPA COC Number
Filter Status	Analyzed	•	

Analyzed by	R. Mahoney				
Analysis date	10/31/200	10/31/2008			
Prep	Direct	~			
ir sample type – air, is there loose material or debris in the cowl?	No	•			
Counting rules	ISO (Air or Dust)	•			
Grid storage location	2708-EMR-96, S				
Archive filter(s) storage location	Westmont				
ginne ere eggisejnesk sest. Distreten Belinkape de Frances (* 1881)	HOUSE TRUIT				
F- factor	1				
QA Type	Not QA	•			

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00017 270801085-0007 Sample Type Air
Count Rule 10312

QA by:

QA date:

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 T. Peters 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification	Mineral Class (b)					1 = yes, blank = no		Fract. GO	
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	H5	ND	A	3	125.246	* ***	75	##7777	4.50	1			144,745		10000	F
1	H7	ND			ex 3 1 7 / 5	100	11 110	977 C.	4974.20	49.90			77.16		100	10000
1	H9	ND		4.07787	36.00			经验的	C13/06	1100			100	\$ 79.JV		
2	C5	ND		A A STATE OF	18 3 7 4 8 X	2017 (A) 1973.	Markey Sych		67.65.74	rate	100	And the second second	- Factor	11.0		100
2	C7	ND	\$1.00 miles	44	XXX 1-12	to mary the		76.7	有效性表表	1000				***		

BA-00018_270801085-0008_ISO_10-31

Versid

5

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed BA-00018 EPA Sample Number QA Type Not QA

Lab Sample Number

Sample Type Category Field Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 5

Number of Grid Openings (chrysotile)

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 2538 L Sensitivity (amphibole) 2.33E-03 s/cc

Sensitivity (chrysotile) 2.33E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801085-0008

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

OK

Check ΟK OK Grand total OK 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td>,</td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td>,</td><td></td></dl<></td></dl<>	<dl< td=""><td>,</td><td></td></dl<>	,	
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00018 270801085-0008 ISO 10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Fleid		
Filter Status	Analyzed 🔻		

COMMENTS

EPA Sample Number:	BA-00018			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	2538	3		
Date received by lab	10/20/2	800		
Lab Job Number:	270801	085		
Lab Sample Number:	27080108	5-0008		
Number of grids prepared	5			
Prepared by	K. Barr	nes		
Preparation date	10/20/2	800		
EPA COC Number	L1465	50		

Analyzed by	R. Mahoney			
Analysis date	10/31/200	8		
Prep	Direct	•		
ir sample type – air, is mere loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, T Westmont			
Archive filter(s) storage location				
Tipologija i prijesti prijesti prijesti prijesti prijesti. Districti prijesti p	krime ile viria			
F- factor	1.			
QA Type	Not QA	-		

Recording Rules: Stopping Rules: ≥ 3:1 Minimum Aspect Ratio Target Sensitivity 0.0024 GOs required to reach 5 0.50 Minimum Length (um) target sensitivity Minimum Width (um) Maximum # of GOs 50 Maximum # of Structure 5 Estimated # of GOs F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing IFor dust and dustfall, enter 1.01

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

BA-00018_270801085-0008_ISO_10-31-08_D.xls

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00018 270801085-0008 Sample Type Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	A5	ND		September 1		1.46%	ergetterri i tro	100	10 PM	444	100				24.67	2715 Jan
1	A7	ND		Post City		AC 模型	and the second	1000000	6 6 5 5 6	Section 1	1 4 4	interest in the second			1000	
1	A9	ND	100				200	1000		1876		a section of the sect		Marie and Rev		200
2	C3	ND		Self-trajectic				40.5	Mark Mark		State of	San San San San San San San San San San		164	Cange	0.00
2	C5	ND		S. O. BANK IN		14.4	1000		7.0	84 - N. S.	1000	Grand Control		4.25	district the	44-47-00-7



SAMPLE ID

Status

QA Type

Analyzed BA-00019

Not QA

Field

Lab Sample Number Sample Type

EPA Sample Number

270801085-0009

Category Prep Counting Rules Air

Direct 10312 **PARAMETERS**

Effective filter area Indirect factor

385.0 mm2

1.00E+00 5

Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

5 0.0130 mm2

Grid opening area Volume (L) or Area (cm2) Sensitivity (amphibole)

2523 L 2.35E-03 s/cc

Sensitivity (chrysotile)

2.35E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	<u> </u>	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	ь	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00019 270801085-0009 ISO 10-31-08 D xls

11/4/2008, 10:30 AM

FILE NAME: BA-00019 270801085-0009 ISO 10-31-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360,0		
Category	Field 🔻		
Filter Status	Analyzed 🔻		

COMMENTS

EPA Sample Number:	BA-00019		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	2523)	
Date received by lab	10/20/2	800	
Lab Job Number:	270801	085	
Lab Sample Number:	27080108	5-0009	
Number of grids prepared	5		
Prepared by	K. Barr	ies	
Preparation date	10/20/2	800	
EPA COC Number	L14650		

Analyzed by	R. Mahoney		
Analysis date	10/31/200	8	
Prep	Direct	•	
ir sample type – air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-9	7, A	
Archive filter(s) storage location	Westmor	nt	
And Person Commenced Andrews Colombia Traffic Story (1988)			
F- factor			
QA Type	Not QA	•	

Recording Rules:

Stopping Rules:

	_		
≥ 3:1 🔻	Minimum Aspect Ratio	V. U U Z 1	Target Sensitivity
0.50	Minimum Length (um)	40 h 70 h 70 k (GOs required to reach target sensitivity
none	Minimum Width (um)		Maximum # of GOs
		50	Maximum # of Structure
F-factor C	alculation:	5	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

EPA SAMPLE ID: BA-00019 LAB SAMPLE ID: 270801085-0009

Sample Type Air Count Rule i∉10312

QA by:

QA date:

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

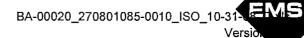
L. Ramowski 11/3/2008

T. Peters

11/4/2008

- College particular college and management of the college particular college particles by the college particular college parti	The state of the s	
Table Committee Described	^	
I ardet Sensitivity Reached	Complete current GO, then st	

Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	dentinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	B3	ND		14,229,00		法数据法	Service Control of	4 2 69	Physical Co.	美国	有数学		110	100		
1	B5	ND			100	10000	Green State		STORY.	90-7			800 A	Sala	467.76	44.80
1	B7	ND	C		217735A	2.33	#50 ALC 71	外电 分数	42.00	46	40.243		1074		14.186	384564
2	A3	ND			Sign Cons	0.000	All part of	Section 2		4	200	A STATE OF THE STA	(100 p)	100.00	76.04	
2	A5	ND		36×47/5	32432	ar regression	and the second	100	Page 1	100	100			2,4763		1,371,000



SAMPLE ID

PARAMETERS

Status Analyzed EPA Sample Number BA-00020 QA Type Not QA

Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 10

Lab Sample Number

Number of Grid Openings (chrysotile) 10

Sample Type

Category

Grid opening area

Effective filter area

0.0130 mm2

385.0 mm2

Prep

Blank Direct 10312 Volume (L) or Area (cm2) 0 L Sensitivity (amphibole) Blank s/cc Sensitivity (chrysotile) Blank s/cc

Recording Rules:

Counting Rules

Min AD	Min length (um)	Min width (um)
MIII. AR	wiin lengin (um)	with width (um)
≥ 3:1	0.5	none

270801085-0010

Stopping	
Rules:	

Target S	Max GOs	Max N		
	10	50		

COUNTS (based on countable structures only)

0

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check Grand total

OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00020 270801085-0010 ISO 10-31-08 Dixis

11/4/2008, 10:31 AM

FILE NAME: BA-00020_270801085-0010_ISO_10-31-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27				
Instrument	JEOL 100 CX II (49)				
Voltage (KV)	100 kV				
Magnification	19,000 X				
Grid opening area (mm2)	0.0130				
Scale: 1L=	1.000				
Scale: 1D =	1,000				
Primary filter area (mm2)	385.0				
Secondary Filter Area (mm2)	360.0				
Category	Blank 🔻				
Filter Status	Analyzed 🔻				

EPA Sample Number:	BA-00020			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)				
Date received by lab	10/20/2	800		
Lab Job Number:	270801085			
Lab Sample Number:	270801085	5-0010		
Number of grids prepared	-5			
Prepared by	K. Barr	ies		
Preparation date	10/20/2	800		
EPA COC Number	L1465	60		

Analyzed by	R. Mahoney
Analysis date	10/31/2008
Prep	Direct
ir sample type – air, is mere loose material or debris in the cowl?	No 🔻
Counting rules	ISO (Air or Dust)
Grid storage location	2708-EMR-97, B
Archive filter(s) storage location	Westmont
Änder file erroterrikt och in der ette Richarde file i sprater i den som	20 20 6 10 80 20
F- factor	
QA Type	Not QA

Recording Rules:

Stopping Rules:

A STATE OF THE PERSON NAMED IN	≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
	0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
	non	e	Minimum Width (um)	10	Maximum # of GOs
				50	Maximum # of Structure
	F-fact	or C	alculation:	10	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

Grid opening traverse direction:

F-factor

V

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID: BA-00020 270801085-0010 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

1				477	S. 1500		10			10,14		-		2. 4		2:10	** . 7		-	4. 15	el anni			X 11		236	6917				12.				34.2		-	_	1	75.	200	11		100	4.41	1.	o
Ý	w.	27	in	mï	117	1 I	t s	w	1.	11	А.	47	n	21	mı	n	~	2	w	0	21	٠,	10	M.	_ [•	m	m	10	M C		٦.	17	ro	m	1	ι			m	0	n	. •	rn	n	199	×

Grid	Grid	Structure	No. of Structures [uctures Dimensions (a)		Identification		Mineral C	lass (b)			1 = ye	= no	Fract. GO	
Gild	Opening	Type	Primary	Total	Length	Width	roenimoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	D2	ND	A. 14 (A. 14)	at a set			Man Control	100	300	100	242.9		200	翻到其		100
1	D4	ND					fact of			34.00	74.				6000	
1	D6	ND	er Eyer			18 S S S S							1,000			10.5187
11	D8	ND	2.5			1000	100 miles	1444	sa Li	194			100 PM	* \$10	27.8 12.0	
11	D10	ND	Contract Contract		1000	1.00 mg/s		56 C			100					1911
2	[1	ND	34.3	16567213	9-11.05 E	# 3				Sale:						
2	13	ND	TO ALC:		- 6-54	4.4		115.14		1400			(10 10 10		V-6.78	
2	15	ND	1,000	100.00	1-25			**************************************		350360	Parts.	-	**********	* ***	Sec. 124	2012
2	17	ND		994 T.S.	ACTIVE E	en Description		3,10	804 PM	MARK E		(1) 10 10 10 10 10 10 10 10 10 10 10 10 10	10.00	77.53	44.57	A 34 (1)
2		ND		37 man	7.4	1900	3(4) (2)	港等時	3,000	100	1604	And the state of the State of t			2 (15	Z47454



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BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Status Analyzed **EPA Sample Number** QA Type

BA-00026 Not QA

Lab Sample Number 270801085-0011

Sample Type Category Field Prep Direct Counting Rules 10312 Effective filter area 385.0 mm2 1.00E+00 Indirect factor Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 1961 L

Sensitivity (amphibole) 2.16E-03 s/cc Sensitivity (chrysotile) 2.16E-03 s/cc

Recording Rules:

Min. AR Min length (um) Min width (um) ≥ 3:1 0.5 none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK

Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00026_270801085-0011_ISO_10-31-08_D.xls

11/4/2008, 10:32 AM

FILE NAME: BA-00026_270801085-0011_ISO_10-31-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX I (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field		
Filter Status	Analyzed 🔻		

COMMENTS

EPA Sample Number:	BA-00026		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1961		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-001		
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	800	
EPA COC Number	L1465	i0	

R. Mahone 10/31/200 rect D (Air or Dust)		
rect	8 •	
	*	
	~	
O (Air or Dust)	•	
2708-EMR-97, C		
Westmon	t ,	
14 /4 /17 to		
1		
	•	
	1 ot QA	

Recording Rules:

Stopping Rules:

-		*		
≥ 3:1	~	Minimum Aspect Ratio	0,0024	Target Sensitivity
0.	50	Minimum Length (um)	7	GOs required to reach target sensitivity
no	ne	Minimum Width (um)	-	Maximum # of GOs
			50	Maximum # of Structure
F-fac	tor C	alculation:	7	Estimated # of GOs

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

V

EPA SAMPLE ID: LAB SAMPLE ID: BA-00026 27,0801085-0011 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

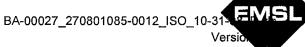
ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

					,		2000									
Grid	Grid	Structure	No. of S	Structures	Dimens	sions (a)	Identification		Mineral (Class (b)			1 = ye	s, blank	= no	Fract. GO
Ond	Opening	Type	Primary	Total	Length	Width	Identinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	H5	ND	40.00	45.30	especially.		tion of the	4		C (57.4 (199)	32, bu	20 6 20 (4.5)	600 KB	A 25	20.00	98.905.2
1	H7	ND	4.2	21.77	e accept				Mark.	442.125	1	Andrews Commence		inest!	44.54	
1	H9	ND		100		340.3°	955 - FE	## 1 W	d see	100	122		100	100	100	
2	C4	ND	141914 (17)			Sept.	4063616	96.75		28.05	175		1144		9.00	
2	C6	ND	27000	44.77		13.		60	150	1,20	200		196		100	
2	C8	ND	0.00	. 342 EW	194297	48000		40 40 E 14	220.2	Hara Mari	4.75				***	12 W. 11
2	D9	ND		7.70		1	TENERS OF	# # W	200	1, 100	7946		100	4		



385.0 mm2

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS Effective filter area

Status Analyzed BA-00027 EPA Sample Number Not QA QA Type

Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 10

Lab Sample Number

Number of Grid Openings (chrysotile) 10

Sample Type

Grid opening area 0.0130 mm2

Blank Category Prep Direct Counting Rules 10312 Volume (L) or Area (cm2) 0 L Sensitivity (amphibole) Blank s/cc Sensitivity (chrysotile) Blank s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801085-0012

Stopping Rules:

Target S	Max GOs	Max N
	10	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	О		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	ОК		

Check OK OK OK Grand total

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<≃.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00027 270801085-0012 ISO 10-31-08 D.xis

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name: EMSL27			
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Blank 🔻		
Filter Status	Analyzed 🔻		

COMMENTS

EPA Sample Number:	BA-00027		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)		·	
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-001		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/20/2008		
EPA COC Number	L14650		

Analyzed by R. Mahoney			
Analysis date	10/31/2008		
Prep	Direct	•	
If sample type – air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-97, D		
Archive filter(s) storage location	Westmont		
The standard consistence in th			
F- factor	1:3		
QA Type	Not QA	•	

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
nor	ne	Minimum Width (um)	10	Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	10	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

EPA SAMPLE ID: LAB SAMPLE ID: BA-00027 270801085-0012 Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T.Peters
QA date: 11/4/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Ond	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	ED\$	Chrys.
1	D2	ND		200 (2004)	12.77		Market Committee	17.664 P	an in GA	200	Martin.			46-21	THE	0.7 (4.17.4)
1	D4	ND			7.7	Mark of the	18 18 Care	建筑 型。	400	13000	333073					
1	D6	ND	a printer of				Mare or to	23 P	12 (4)	140.00	6.5	Control of the Control	\$15 4 (\$		100	1000
11	D8	ND	4.64	es a facility	1000	74.H##		2243	-13000	77.05	(Breaker)		di Galla			FORE
11	D10	ND				4.4	## ## ## ##	25132		51397	1890 共和				*(1)	11.0
2	B2	ND		ng / ikg-							Carlo de		¥ 6.000 it			100
2	B4	ND		1,076,720	《大学》		4.772 - 4.6	7 7 7 8		177.60	0.52		e e e	orași i	4.75	Contraction (
2	B6	ND					100	400	100		47.23		(4) (4) (4) (4) (4) (4) (4) (4) (4) (4)			4.4
2	B8	ND			100		4	4.7434	1	17.20	1000		Heis	700	300	All the second
2	D2	ND			2012		1.0	14 A	美国的		T-10 (1)		40.0			



SAMPLE ID

PARAMETERS

Status Analyzed
EPA Sample Number BA-00028
QA Type Not QA

Not QA

Lab Sample Number Sample Type

270801085-0013 Air

Category Field
Prep Direct
Counting Rules 10312

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 7
Number of Grid Openings (chrysotile) 7

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 1968 L

Sensitivity (amphibole) 2.15E-03 s/cc Sensitivity (chrysotile) 2.15E-03 s/cc

RecordingMin. ARMin length (um)Min width (um)Rules:≥ 3:10.5none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 50

COUNTS (based on countable structures only)

Bin	LA	OA OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK
Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00028 270801085-0013 ISO 10-31-08 D.xls

11/4/2008, 10:37 AM

SM

FILE NAME: BA-00028_270801085-0013_ISO_10-31-08_D.xis

FILE TYPE: Original

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)	7	GOs required to reach target sensitivity
non	е	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	7	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name: EMS			
Instrument	JEOL 100 CX II (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed		

BA-00028		
Air	-	
1968	3	
10/20/2008		
270801085		
270801085-001		
5		
repared by K. Barnes		
10/20/2008		
L1465	60	
	1968 10/20/2 2708010 270801085 5 K. Barr 10/20/2	

Analyzed by	R. Mahone	еу	
Analysis date	10/31/200	18	
Prep	Direct	•	
ir sample type – air, is mere loose material or debris in the cowl?	No	~	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-97, E		
Archive filter(s) storage location	Westmor	nt	
de total for her traditions and the state of			
F- factor			
QA Type	Not QA	-	

COMMENTS

Version

385.0 mm2

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS Effective filter area

Status Analyzed **EPA Sample Number** BA-00034 QA Type Not QA

1.00E+00 Indirect factor Number of Grid Openings (amphibole) 8 Number of Grid Openings (chrysotile) 8

Lab Sample Number Sample Type

270801085-0014 Grid opening area 0.0130 mm2 Volume (L) or Area (cm2)

Field Category Prep Direct 10312 Counting Rules

1718 L Sensitivity (amphibole) 2.15E-03 s/cc Sensitivity (chrysotile) 2.15E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Air

			4 /		
Bin	LA	OA	СС	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total OK 0

CONCENTRATION (s/cc)

Bin	LA	OA	C	PCME(all)	PCME(asb)			
а	<dl< th=""><th><dl< th=""><th><dl< th=""><th></th><th></th></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""><th></th><th></th></dl<></th></dl<>	<dl< th=""><th></th><th></th></dl<>					
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>					
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>					
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>					
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>					
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>					
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>			

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00034_270801085-0014_ISO_10-31-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX (49)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L=	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field	~		
Filter Status	Analyzed	•		

BA-00034			
Air	•		
1718			
10/20/2008			
270801085			
27080108	5-0014		
5			
K. Barr	ies		
10/20/2	800		
L14650			
	1718 10/20/2 27080108 5 K. Barr 10/20/2		

Analyzed by	R. Mahoney		
Analysis date	10/31/2008		
Prep	Direct		
Ir sample type – air, is there loose material or debris in the cowl?	No 🔻		
Counting rules	ISO (Air or Dust)		
Grid storage location	2708-EMR-97, F		
Archive filter(s) storage location	Westmont		
Total the second statement and second	***		
F- factor			
QA Type	Not QA		

Recording Rules:

Stopping Rules:

	110001	CI,III	Traico.	Gropping reaces.					
	≥ 3:1	•	Minimum Aspect Ratio	0.002	Target Sensitivity				
0.50		0.	Minimum Length (um)	8	GOs required to reach target sensitivity				
	none		Minimum Width (um)		Maximum # of GOs				
				50	Maximum # of Structure				
	F-fact	or C	alculation:	8	Estimated # of GOs				

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID: BA-00034 270801085-0014 Sample Type Air
Count Rule 10312

Prep Direct QA Type Not QA

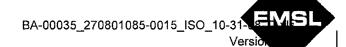
ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Section of the Section of Section 1	2 3 4 4 5 5 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6		2012 A 11 10 2 11 11 1		A DESCRIPTION OF THE PROPERTY.		the same of the sa
Target	Concitio	rity Ros	chod-f	omnle	e current	CCO th	ion etan

Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	B2	ND				A Paris	i gajeti en jagetika	40.00	in Section	to ak	26.04		192 M. VAN	10.00	1.775.40	41 May 2014
1	B4	ND				321.573	Sugar Walter St.	***	13/16/2	48-46			- 100			
1	B6	ND			11111				(A)			10 10 10 10 10 10 10 10 10 10 10 10 10 1	ticker.	94 (A)	* 1	
1	D3	ND					48 F# \$20 W	100	A 4. 4. A	t_{x+y}	SV My		and the	No.	44 m/g	7 C C C C C C C C C C C C C C C C C C C
2	D2	ND							* (33)		17.50	SHEEL PROPERTY OF	11.14	1	X-200	2000
2	D4	ND			1000	40.2 457	100000000000000000000000000000000000000			16.16			100	45.00		
2	D6	ND				-0.48 T	1907/1917		400	4.77	200			10.00	10.5	
2	D8	ND			100	MARKET !	100000	7.76 A	17079-4	1000	100		200		** SE	395



SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00035

Not QA

10312

QA Type Lab Sample Number 270801085-0015

Sample Type Air Field Category Prep Direct

Counting Rules

PARAMETERS

Effective filter area Indirect factor

1.00E+00 8

Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile) Grid opening area

8 0.0130 mm2

385.0 mm2

Volume (L) or Area (cm2)

1718 L

Sensitivity (amphibole) Sensitivity (chrysotile)

2.15E-03 s/cc 2.15E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N		
0.0024		50		

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0	***	
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK OK Grand total

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00035 270801085-0015 ISO 10-31-08 Dixis

FILE NAME: BA-00035_270801085-0015_ISO_10-31-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX II (49)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1,000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field 🔻			
Filter Status	Analyzed 🔻			

EPA Sample Number:	BA-00035		
Sample Type	Aîr	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1718		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-0015		
Number of grids prepared	- 5		
Prepared by	K. Barnes		
Preparation date	10/20/2008		
EPA COC Number	L14650		

Analyzed by	R. Mahoney			
Analysis date	10/31/2008			
Prep	Direct V			
ir sample type – air, is there loose material or debris in the cowl?	No 🔻			
Counting rules	ISO (Air or Dust)			
Grid storage location	2708-EMR-97, G			
Archive filter(s) storage location	Westmont			
Finds the springers while in America.	de de antigenes de la companya de la			
F- factor	1			
QA Type	Not QA			

Recording Rules:

Stopping Rules:

		•		
≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.5	0	Minimum Length (um)	The second of the second of	GOs required to reach target sensitivity
non	e	Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
E-fact	٥٠٥	alculation:	8.	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID: BA-00035 270801085-0015 Sample Type Air
Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: T. Peters
QA date: 11/4/2008

Target Sensitivity Reached-Complete current GO, then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Ond	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	D3	ND	2 S 18 S 2	rate of the	44.00	THE STATE	Market Const	1 may 1	1000015	100	district.	the Control of the Wife	(Carrier	1	A MARIA	4
1	D5	ND	Statement,		47674 SE		Manager and	S01497	1,000	27.00	110	to the state of the	200		40, N. W.	Estable.
1	D7	ND	2.3								4	and the second second	3.4650	1	Marie V	1000
1	D9	ND	7 M 1 1				Section 1	Britis in	A 40	Market 1			13413.2			100
2	- G2	ND	Sept.	of the second			100000000000000000000000000000000000000	April 1900	20472	###\$ji	2.50		3200	30-7		387,000.7
2	G4	ND	2466-4		SAPE OF		48344	45.7	32.04	117,619	100	are en la servicio de la companya de la companya de la companya de la companya de la companya de la companya d	(ST#1/2)		12/12/03	71.25
2	G6	ND	4-79546	20.0		90.3 (4)	45.00	400.00	ENTRY	1973	***		100	***	12 122	12.20
2	G8	ND	28 MK (4	A	15.72.75		6 1	2 July		200	\$400.E	C. 1000 4937				17 A. 17 A.

BA-00026_270801085-0011_ISO_11-03-08_ Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed BA-00026 EPA Sample Number QA Type RS

Lab Sample Number Sample Type

270801085-0011 Air

Category Prep Counting Rules Field Direct 10312

PARAMETERS

385.0 mm2 Effective filter area Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 7 Number of Grid Openings (chrysotile) 7 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2) 1961 L Sensitivity (amphibole) 2.16E-03 s/cc Sensitivity (chrysotile) 2.16E-03 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK ΟK Grand total 0 OK

CONCENTRATION (s/cc)

Bin_	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00026 270801085-0011 ISO 10-31-08 DRS xls

FILE NAME: BA-00026_270801085-0011_ISO_11-03-08_DRS.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (49)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field		
Filter Status Analyzed			

EPA Sample Number:	BA-00026		
Sample Type	Air		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1961		
Date received by lab	10/20/2008		
Lab Job Number:	270801085		
Lab Sample Number:	270801085-0011		
Number of grids prepared	- 5		
Prepared by	K. Barr	es	
Preparation date	10/20/2	800	
EPA COC Number	L1465	0	

QA Type	Recount Same	•	
F- factor	123		
Tanko da komunistra establis d e la 1878 . Richingo do la Santano de Caraco	ran gal o	; ; ; ;	
Archive filter(s) storage location	Westmont		
Grid storage location	2708-EMR-97, 0		
Counting rules	ISO (Air or Dust)	•	
ir sampre type – air, is there loose material or debris in the cowl?	No	•	
Prep	Direct	•	
Analysis date	11/3/2008		
Analyzed by	R. Mahoney		

Recording Rules:

Stopping Rules:

130014114114114				Ocopping.	10.00.
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
	0.5	0	Minimum Length (um)	7	GOs required to reach target sensitivity
none Minimum Width (um)			Maximum # of GOs		
				50	Maximum # of Structure
	F 56	C		7	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

BA-00026_270801085-0011_ISO_11-03-08_DRS.xls

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00026 270801085-0011 Sample Type Air
Count Rule 10312

Prep Direct QA Type RS

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/3/2008 QA by: QA date:

T. Peters 11/4/2008

		色と見るなく いんしょうちょく た	经收益处理的 医多种性性 化二氯甲烷 经通过转换 医电影
arget Sensitivit	v Reached-Con	iblete curre	nt GO, then stop.

				00110110			Combine to chart dies permater as safety									
Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	Idefilindation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	H5	ND	ranga katan	W 16, 7479.		15,500,000	Park of the	44.00	30 A 40	****	松菜的 排		MARKS	074 kg	9777	
1	H7	ND		27,777				学 有表	77.1	# (C)	***		45.45	100		
1	H9	ND					May 1 Y 2 5 3 5 14	(A) (E) (S)			i i itr	11/1/2014	100		14.0	
2	C4	ND		40.44.00		10 30 K 4 C	THE MARKET		VIII TO	i E			1000	10.00	7.4	1,01-1882
2	C6	ND		Marin Park		1. P. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	eteratere e	THE RES	E3148			The state of the state of	MARKET ST	30.00 mg	49	
2	C8	ND					Car of Miles						100000	HE LE		100
2	D9	ND	1010		13		747 THE		9.55	100				W. W.	4.24	

SAMPLE ID

PARAMETERS

Status EPA Sample Number Analyzed 0

Effective filter area Indirect factor

385.0 mm2

QA Type

LB

Number of Grid Openings (amphibole)

1.00E+00 10

Lab Sample Number

270801085

Number of Grid Openings (chrysotile)

10

Sample Type

Air

Grid opening area

0.0130 mm2

Category

Blank

Volume (L) or Area (cm2)

0 L

Prep Counting Rules Direct 10312

Sensitivity (amphibole) Sensitivity (chrysotile)

Blank s/cc Blank s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
	10	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	ОК	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d					
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

270801085 ISO 11-14-08 DLB.xls

11/17/2008, 10:50 AM

FILE NAME:

_270801085_ISO_11-14-08_DLB.xls

FILE TYPE: Original

Recording Rules:

0.50

none

≥ 3:1 Minimum Aspect Ratio Minimum Length (um)

Minimum Width (um)

Stopping Rules:

spirid Hales.					
10	Target Sensitivity GOs required to reach target sensitivity				
10	Maximum # of GOs				

Maximum # of Structure

Estimated # of GOs

TEM Asbestos Structure Count

BNSF 2008 Libby Site Investigation v32h

Laboratory name:	EMSL27				
Instrument	JEOL 100 CX II (49)				
Voltage (KV)	100 kV				
Magnification	19,000 X				
Grid opening area (mm2)	0.0130				
Scale: 1L=	1.000				
Scale: 1D =	1,000				
Primary filter area (mm2)	385.0				
Secondary Filter Area (mm2)	360.0				
Category	Blank 🔻				
Filter Status	Analyzed 🔻				

EPA Sample Number:		
Sample Type	Air	-
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)		· · · · · · · · · · · · · · · · · · ·
Date received by lab		
Lab Job Number:	2708	01085
Lab Sample Number:	2708	01085
Number of grids prepared		3
Prepared by	K. B	arnes
Preparation date	10/2	0/2008
EPA COC Number	L1	4650

Counting rules ISO (Air or Dust)	cowl?	1	_			
Archive filter(s) storage location Westmont	Grid storage location Archive filter(s) storage location	2708-EMR-97, H Westmont				

F-factor Calculation: Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

10

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

V.

COMMENTS

EPA SAMPLE ID: 0 270801085

Sample Type Count Rule 10312

QA by:

QA date:

Prep Direct LB

ERROR CHECK
OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/12/2008 K. Lusher 11/17/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	class (b)			1 = ye	s, blank :	= по	Fract. GO
Ond	Opening	Туре	Primary	Total	Length	Width	lacilinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	B7	ND	10000	2004年11年4	基準化的	4.54.54		144	17.45	年3年第	10000		4000	1/1927	Will State	
1	B8	ND					tig			3.7	\$8.0°	Adding the second	3.44			
1	14	ND	77.04.6			2. 数据 2. 第	200 P 02 P	(3)		160					4.4	
1	J5	ND	1500000		4.4.5	4 4 4 4	77. O. S.	100	Topological Science Sc	2.46	7.6 3.4		The second second	Park Park		10 A 10 B
1	J 9	ND					- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		10	100	9465	(Street of the street of the s				100
2	J3	ND	77.7		25.0		100 C C C C C C C C C C C C C C C C C C	B iogram			11111		A Commence			大学
2	J5	ND	30.00			7.5 E			74.44				Tolkini.	0.000		
2	12	ND				A				7 SERVIN	Adams.	400	*****	100	iment.	
2	14	ND	S-14775-95(a)		30 40	有限的主義	Hallan Topia		48			Sec. 1				4.244
2	G6	ND				200			其政功	3.				47.0	44	

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L=	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA -0000 6
Sample Type (A=Air, D=Dust, DF = Dustfali):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1778
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-000
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

R. Mahoney
10/3/108
D
No
ISO
2708-EMR-96,
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:	
Minimum Aspect Ratio (circl	e one):
none ≥ 3:1)	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	7
Target # of Structures:	50

F-factor Calculation:

Indirect Prepared	Inputs
l li	Fraction of primary filter used for ndirect prep or ashing For dust and dustfall, enter 1.01
	First resuspension volume or rinsat volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume epplied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Min	neral Class	(see belo	w)	Sketch/ Comments	1 = ye	es, blank :	= no	Fract. GO
	Ond Operaing	Туре	Primary	Total	Length	Width	ide: iuiida iid:	LA	OA	С	NAM	OKEIOII OOMMENIS	Sketch	Photo	EDS	Chrys.
1	B5	מַע														
Ì	B8	מע														
	p 3	میر														
<u>↓</u>	p 5	νe														
2	G3	מע														
	G5	NO														
4	G-7	NO													**********	
							/	21am	10/	121						
									7	-//	- A					

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material



Are prepped grids acceptable for analysis? (circle one) {
If No, explain:



)	No
3	

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00007
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1763
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-000
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

R. Mahoney
10/31/08
D
No
ISO
2708-EMR-96, N
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right--->

Recording Rules:				
Minimum Aspect Ratio (circle one);				
none ≥ 3:1)	≥ 5:1			
Minimum Length (um):	0.5			
Minimum Width (um):	None			
				

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	7
Target # of Structures:	50

-	GO	F-factor Calculation:
	Chrys.	Indirect Prep Inputs
-		Fraction of

ct Prep Inputs
Fraction of primary filter used for indirect prep or ashing
[For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	tification LA OA C NAM		Sketch/ Comments	1 = yes, blank = no			Fract. GO		
Gild	Grid Opening	Type	Primary	Total	Length	Width	Identification			Sketch Comments	Sketch	Photo	EDS	Chrys.		
	C4	an						***							,	
1	C6	מא													440000	
	cg	מט														
<u> </u>	83	NA														
2	CY	NO											***************************************			
	C6	שמ														
4	c8	מא														
							R	lan 11	2/3//0	р						

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): Horizontal



Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

NB

ND

ND

NO

NO

No. of Structures

Total

Primary

EPA Sample Number:	BA-00008
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	2440
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-000 3
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	R. Mahoney
Analysis date	10/3/108
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	IŞO
Grid storage location	2708-EMR-96, Ø
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Minimum Aspect Ratio (circle one):			
	,.		
none ≥ 3:1	≥ 5:1		
Minimum Length (um):	0.5		
— Minimum Width (um):	None		

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	6
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

EDS

Indirect Pren Innuts

	TOP III Paro
1	Fraction of primary filter used for
1	indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsat volume (mL)
	Volume epplied to secondary filter

Inputs for Serial Dilutions

	Second resuspension volume (mt
*	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
·	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for

LA =	Libby-type	amphibole

Grid

Grid Opening

H4

C5

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Rica 10/31/08

Mineral Class (see below)

C

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

Grld opening traverse direction (circle one): H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes If No, explain:



>	No	

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	3 <i>85</i>
Secondary Filter Area (mm2)	3 <i>85</i>
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-06009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	2402
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-000 ੯
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):	
Enter data in appropriate cells provided to the right>	

Recording Rules:	
Minimum Aspect Ratio (circle one):	
none (23:1)	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	6
Target # of Structures:	50

F-factor Calculation:

Indirect Prep Inputs		
	Fraction of primary filter used for indirect prep or ashing (For dust and dustfell, enter 1.0)	
	First resuspension volume or rinsa volume (ml.)	
	Volume applied to secondary filter	

(mL) or used for serial dilution

Inputs for Serial Dilutions		
	Second resuspension volume (mL)	
	Volume applied to secondary filter (mL) or used for serial dilution	
	Third resuspension volume (mL)	
	Volume applied to secondary filter	

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

Grid	Grid Grid Opening	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Min	eral Class	(see belo	w)	Sketch/ Comments	1 = yes, blank = no			Fract. GO
Ond		Туре	Primary	Total	Length	Width	Rectalised	LA	OA	С	NAM	CREATE COMMENTS	Sketch	Photo	EDS	Chrys.	
1	A3	מע										`					
	A5	מע															
4	B4	NO															
2	A4	NΔ															
	<i>A</i> 7	ND															
4	C7	NO															
						,											
						Can	10/31/0	2 p									
											_		,				
			•							-			,				

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

Structure

Type

NO

NB

NP

No. of Structures

Total

Primary

EPA Sample Number:	BA-00010
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	Ð
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-0005
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose materi or debris in the cowl? (Yes, No)	al No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, Q
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA
reconcitation, Lab olarik, Interlab)	

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Minimum Aspect Ratio (circle one):				
	,.			
none (≥3:1)	≥ 5:1			
Minimum Lanath (um)	0.5			
Minimum Length (um):	0.5			
Minimum Width (um):	None			

Stopping Rules:				
Target Sensitivity:				
Max # of GOs:	10			
Target # of Structures:	50			

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter
(mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

(mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

Grid

Grid Opening

02

010

02

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

V Vertical

Are prepped grids acceptable for analysis? (circle one)



) No

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

シカ ND

NO

ND

Grid Opening

Grid

No. of Structures

Total

Primary

EPA Sample Number:	BA - 00016
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α .
Air volume (L), dust area (cm2), or dustfall container area (cm2)	2675
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-0006
Number of grids prepared	5
Prepared by	K, Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

10/2/10

R. Mahoney
10/31/08
D
No
ISO
2708-EMR-96,
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Minimum Aspect Ratio (circ	le one):
none ≥ 3:1	≥ 5:1
Minimum Length (um):	0.5
— Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	5
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrvs.

EDS

		_		
inai	rect	Prep	Inpu	t

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

OA

С

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

Grid opening traverse direction (circle one): H Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	3 60
Category (Fleid, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

No. of Structures

Total

Primary

EPA Sample Number:	BA-00017
Sample Type (A=Air, D=Dust, DF = Dustfail):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	2675
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-0007
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

R. Mahoney
10/31/08
D
No
ISO
2708-EMR-96, S
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:		
Minimum Aspect Ratio (circle one):		
none ≥ 3:1	≥ 5;1	
Minimum Length (um):	0.5	
Minimum Width (um):	None	
-		

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	5
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

HIGHACT LIE	sp inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinset volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution
Third resuspension valume (mL)
Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

Grid

2

2

Grid Opening

OA = Other (non-Libby type) amphibole

Dimensions

Length Width

C = Chrysotile

K/cm (0/31/0)

Mineral Class (see below)

OA

С

NAM

NAM = Non-asbestos material

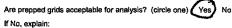
1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):
H Horizontal

\odot	Vertic
---------	--------



≥ 5:1

0.5

None

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grld opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

BA - 00018
Α
2538
10/20/08
270801085
270801085-000
5
K. Barnes
10/20/08
L14650
0.2

Analyzed by	
	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, T
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	5
Target # of Structures:	50

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Grid Opening	Structure	No. of Str	ructures	Dimer	nsions	Identification	Min	eral Class	(see belo	w)	Sketch/ Comments	· 1 = ye	s, blank	= no	Fract. GO
O.M. Opoliming	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	OROLOW COMMICHAS	Sketch	Photo	EDS	Chrys.
A5	مه														
A7	NA														
A9															
C 3	·														
25															
						х									
						RIC	\$ //1	, ,							
							~	21/08			1				
'															
	A7 A9 C3	AS NO A9 NO C3 NO	AS NO A9 NO C3 NO	AS NO Primary Total AS NO A9 NO C3 NO	Grid Opening Type Primary Total Length AS NO A9 NO C3 NO	Grid Opening Type Primary Total Length Width A5 ND A7 ND A9 ND C3 ND	Grid Opening Type Primary Total Length Width Identification AS NO A9 NO C3 NO C5 NO	AS NO A9 NO C3 NO	AS NO CA NO	Grid Opening Type Primary Total Length Width Identification LA OA C AS NO A9 NO C3 NO	Grid Opening Student Type Primary Total Length Width Identification LA OA C NAM A5 ND	Grid Opening Type Primary Total Length Width Identification LA OA C NAM Sketch/ Comments A5 ND	Grid Opening Type Primary Total Length Width Identification LA OA C NAM Sketch/Comments Sketch A5 ND	Grid Opening Type Primary Total Length Width LA OA C NAM Sketch/Comments Sketch Photo A5 ND	Grid Opening Type Primary Total Length Width Identification LA OA C NAM Sketch/Comments Sketch Photo EDS A5 ND

F-factor Calculation:

Recording Rules:

none

Minimum Length (um):

Minimum Width (um):

Minimum Aspect Ratio (circle one):

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust end dustfell, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal



Are prepped grids acceptable for analysis? (circle one)



No

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L=	· 1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

NO

NO

NO

ND

Grid Opening

Grid

2

A

No. of Structures

Total

Primary

EPA Sample Number:	BA-00019
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	2523
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-000 °
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

RAM 10/3/108

LA

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	iso
Grid storage location	2708-EMR-97,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA
The second second second second	

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:			
Minimum Aspect Ratio (cir	rcle one):		
none ≥3:1	≥ 5:1		
Minimum Length (um):	0.5		
Minimum Width (um):	None		

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	5
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

ndirect Prep Inputs
Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1:0]
First resuspension volume or rinsat volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

mpaco nos c	
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Frection of secondary fifter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

OA

С

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal



Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L=	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00020
Sample Type (A=Air, D=Dust, DF = Dustfail):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	Ð
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-00 /0
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location ,	2708-EMR-97,/3
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right---->

Recording Rules:							
Minimum Aspect Ratio (circ	le one):						
none ≥3:1	≥ 5:1						
Minimum Length (um):	0.5						
Minimum Width (um):	None						

Stopping Rules:		
Target Sensitivity:		
Max # of GOs:	10	_
Target # of Structures:	50	

Grid	Grid Opening	Structure	No. of St	ructures	ructures Dimensions		Identification	Mineral Class (see below)			Sketch/ Comments	1 = ye	Fract. GO			
Ond	Туре	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Sketch Comments	Sketch	Photo	EDS	Chrys.
1	pz	NN							·							
	04	ממ														
	06	NO														
	08	NO														-
1	DIU	ND	,													
2	Ιı	80														
Ì	13	NO														
	I 5	שא														
	<i>I7</i>	מא														
4	I49	מא														,
	RIGO Ida	<i>*</i>														

F-factor Calculation:

Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing
[For dust and dustfall, enter 1.0] First resuspension volume or rinsate

volume (mL) Volume applied to secondary filter

(mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0:013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00026
Sample Type (A=Air, D=Dust, DF = Dustfail):	А
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1961
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-00 \$ \$
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there toose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Historyon Assaul Datis (sin	
Minimum Aspect Ratio (circ	ie one):
none (≥ 3;1)	≥ 5:1
Minimum Length (um):	0.5
— Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	7
Target # of Structures:	50

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Min	eral Class	(see belo	w)	Sketch/ Comments	1 = yes, blank = no			Fract. GO
	G.K. Opcimig	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	OKERCIA COMMENTS	Sketch	Photo	EDS	Chrys.
	H5	מעא				*******										
	H7	ND												٠		
<u>\</u>	H9	Nβ														
2	C4_	מע														
1	C6	ND														
	<8	פט														
1	09	מק										ALAX ARAM AVVAN				
						R	100 10/3	/ -0								
							7.5/	108								

F-factor Calculation:

Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter

(mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):



Vertical

Are prepped gnds acceptable for analysis? (circle one) If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	3 <i>85</i>
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00027
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	Ð
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	. 270801085-00 /2
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right--->

Recording Rules: Minimum Aspect Ratio (circle one): none ≥ 5:1 Minimum Length (um): 0.5 Minimum Width (um): None

Stopping Rules:	
Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	50

ation	Min	eral Class	(see belo	w)	Sketch/ Comments	1 = yes, blank = no			Fract. GO	F-fa
	LA	OA	C·	NAM	ORBIGIT COMMENTS	Sketch	Photo	EDS	Chrys.	Indi

Grid	Grid Opening	Structure	NO. OF SE	ructures	Dimer	isions	Identification	Mineral Class (see below)		w)	Sketch/ Comments	1 = yes, blank = no			GO.	
0.10	Cita Opening	Туре	Primary	Total	Length	Width	IGC/(di)O21O//	LA	OA	C ·	NAM	CREATE OF THE PARTY OF THE PART	Sketch	Photo	EDS	Chrys.
ı	02	פע					,							·		
	04	NP														
	06	NO														
	D 8	NA								_					***************************************	
4	lo 10	NO														
2	B2	NB	ŀ									,		i		
	84	מא						***********								
	86	NP														
	B. 385	20	CX	12/11/	08											
4	D2	an	1													

factor Calculation:

direct Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibote

OA = Other (non-Libby type) amphibole

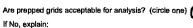
No of Structures Dimensions

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H	Horizonta
D	Vertical





Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ALA.

ND

Grid Opening

B2

35

B7

Grid

2_

No. of Structures

Total

Primary

EPA Sample Number:	88-00028
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1968
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-00 ; 3
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

e/can 10/31/08

Analyzed by	
	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, £
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA
. , , , , , , , , , , , , , , , , , , ,	

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:						
Minimum Aspect Ratio (circle one):						
none ≥ 3:1	≥ 5:1					
Minimum Length (um):	0.5					
Minimum Width (um):	None					

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	7
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing (For dust and dustfell, enter 1.0) First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (ml.)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

OA

С

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BP-00034
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1718
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-00 ! ¥
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

R. Mahoney
10/31/08
D
No
ISO
2708-EMR-97,
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

one):
≥ 5:1
0.5
None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	8
Target # of Structures:	50

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or eshing [For dust and dustfell, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter

Inputs for	Serial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

Grid	Grid Grid Opening Str		No. of St	ructures	Dime	nsions	Identification	Mir	neral Class	(see belo	w)	Sketch/ Comments	1 = ye	es, blank	= no	Fract.
Ond .	Cria Opening	Туре	Primary	Total	Length	Width	Identification	ĻĄ	OA	С	NAM	OKOLOW OOMINIONIS	Sketch	Photo	EDS	Chrys.
1	B2	Np							,							
1	BY	מא	-					-								
	B6	NO					·									
1	03	NØ			,											
2	D)22	NO	CX	12/11/	08								,			
	04	~≀		. ,												
	D6	NO														
4	p8	NO														
									2/4	10/2/	100					

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

.

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00035
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	8171
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-00 /5
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	10/31/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconcillation, Lab Blenk, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Recording Rules:	
Minimum Aspect Ratio (circ	le one):
none ≥3:1	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	8
Target # of Structures:	50

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

(mL)

Second resuspension volume (mL)

Volume applied to secondary filter
(mL) or used for serial dilution

Third resuspension volume (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for

Volume applied to secondary filter

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mir	neral Class	(see belo	w)	Sketch/ Comments	1 = yes, blank = no		Fract. GO	
Grid	Grid Opening	Туре	Primary	Total	Length	Width	ide idication	LA	OA	С	NAM	OKERCIA COMMINENTS	Sketch	Photo	EDS	Chrys.
	<i>p</i> 3	ND														
	05	ND														
	07	NO					***									
4	29	NO														
2	62	NO											***************************************			
	G4	NO										ì				
	G-6	~0														
1	68	ND														
							K	/an	10/3	,,	حہ					
										200						

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H. Horizontal

Vertica

Are prepped grids acceptable for analysis? (circle one) (



) No



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND ND

NO

ND

NB

ND

ND

No. of Structures

Total

Primary

EPA Sample Number:	BA-00026
Sample Type (A=Air, D=Dust, DF = Dustfail):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1961
Date received by lab	10/20/08
Lab Job Number:	270801085
Lab Sample Number:	270801085-0011
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Identification

LA

R. Mahoney
11/3/08
D
No
ISO
2708-EMR-97,
Westmont
Recount Same

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

1 = yes, blank = no

Photo

EDS

Recording Rules:			
Minimum Aspect Ratio (circle one):			
none 23:1	≥ 5:1		
Minimum Length (um):	0.5		
— Minimum Width (um):	None		

Stopping Rules:	
Target Sensitivity:	0.0024
Max # of GOs:	7
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Pren Innuts

HURECLETE	h mhais
	Fraction of primary filter used for
	indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for

LA = Libby-type amphibole

Grid

2

Grid Opening

H5

C4

25

C8

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

Grid opening traverse direction (circle one): Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes)No If No, explain:



(LB)

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (49)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	3 85
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	
Lab Job Number:	270801085
Lab Sample Number:	270801085
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14650
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	11/14/08
Method (D=Direct, 1=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-97, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Lab Blamk

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right--->

Minimum Aspect Ratio (circle one):						
none (≥3:1)	≥ 5:1					
Minimum Length (um):	0.5					
Minimum Width (um):	None					

Stopping Rules:	
Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	50

Grid.	Grid Opening	Structure	No. of St	No. of Structures		nsions	Identification	Mir	eral Class	(see belo	w)	Sketch/ Comments	1 = ye	es, blank	= no	Fract GO
Gilu	Grid Opening	Туре	Primary	Tota!	Length	Width	Identification	LA ·	OA	С	NAM	Sketch Comments	Sketch	Photo	EDS	Chrys
	<i>B7</i>	ND														
1	B9	No														
\perp	I4	~p														<u> </u>
	75	NO						·								-
1	J9	NÞ			-											ļ
2	73	Nb			ļ											
	75	NP														
	<i>I</i> 2	ND														
	I4	κĎ														<u> </u>
1	[ĺ												

F-factor Calculation:

Indirect Prep Inputs
Fraction of primary filter used for Indirect prep or ashing
[For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter
(mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):
Horizontal

Are prepped grids acceptable for analysis?	(circle one)	é
If No, explain:		7

Chain of	f Custody R	ecord				vironmen	tal Protection	nvestigation n Agency, Region VIII	Send to	EMSL-M	No. obile L ab	L14650	1
) Port Blvd, Ste. 2	00	****			15: Den	95 Wynkoop ver, CO 8020	Street 02-1129		107 W 4			
Li	bby, MT 59923					50	10, 00 002	02 1120		Libby, M	Г 59923		
										via:	✓ hand delivery	shipped	
											Date Shipped:		20/2008
								0 100	2		Carrier Name:	Hand-d	
	1	· · · · · · · · · · · · · · · · · · ·	T			T Eller I		27080108	<u> </u>		Airbill:		NA
Sample Placed in Cooler/Bag	ı İndex ID	Suffix ID	Sample Date	Sample Media (S=Soil; W=Water; D=Dust; A=Air; B=Bulk Insulation)	Volume (L) or Area (cm2)	Filter Pore Size (um)	Turn Around Time	Analysi	s Request		Comme	ents	Sample Received by Lab
7	BA-00035		9/23/2008	Α	1718 L	0.8	21 Day	TEM-ISO10312 (ISO 10312:1995 (E))	OU6RR09	08-C	TE
7	BA-00036		9/23/2008	Α	ØL	8.0	21 Day	TEM-ISO10312 (ISO 10312:1995 (E))	Archive OU6R	R0908-D	P
Total Numi Additional C	ber of Samples omments:	16	achma	ent	END	OF SUE	BMITTAL						
21	30.44					******	\cap						
SKAN	`,	Com	10		21 8/-/	ch	Wha	H-Rescedy /21	nst 10/21	60/12	OKT	accept	
Relinquish	d by (Signature	and Com	npany)	Date/Time	Received	by (Sign	sature and		Date/Time	Sar	nple Condition upor	n Receipt	
Relinquish	L WA	A Year	MAN /S)	062 11 / 24	109/1045 J	Lhy (Sign	nature and	Someony EMSL			Y CONURL MODEL	A	

Received by (Signature and Company)

Date/Time

Relinquished by (Signature and Company)

Date/Time

Sample Condition upon Receipt

JOMAY WYATT-PESCADOR 406-293-9066 EMSL ANALYTICAL, INC. 107 WEST 4TH STREET LIBBY MT 59923

25 LBS

1 OF 1

SHIP TO: CHARLES LACERRA 856-858-4800 1253 EMSL ANALYTICAL, INC. 107 HADDON AVENUE

WESTMONT NJ 08108-2711



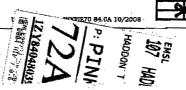


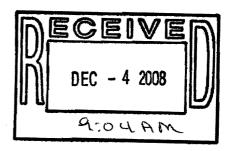
UPS GROUND

TRACKING #: 1Z Y84 048 03 9389 9115



BILLING: P/P





Page 1 of 1

EMSL Analytical, Inc.

107 Haddon Avenue

Westmont, New Jersey 08108

Phone: (856) 858-4800 Fax: (856) 858-9551



LETTER OF TRANSMITTAL

To:	Scott Carney		Date:	Decembe	er 22, 2008
	EMR, Inc.		From:	Charles	E. LaCerra
	11 East Superior Street		Re:	Libby, M	IT BNSF Work
	Suite 260			Mobile I	Lab Analytical Reports
	Duluth, MN 55802			See Belo	W
	Phone: 763-277-5200				
We are ser	nding you: × Atta	iched		Under sej	parate cover via
	Solicitation	□ Сору	of Letter	•	☐ Invoice #'s See Below
	Subcontract	As no	ted		Other
	Laboratory Samples	Malyt Analyt	ical Repor	ts	
	transmitted as indicated ExecuteOriginal(s)		w & Com	ıment	For Approval
	ReturnOrginal(s)	As Re	equested		Respond as instructed
\boxtimes	For Your Information/File				Other
Remarks:					
_	lease find one (1) copy of w and use for the above re		_	e lab anal	ytical reports for analysis for
270801086	5				
Please feel	free to contact me with a	ny question	s or if you	u require a	additional information
Copy to:			_ Signed:	: Cha	rlio La Cerra

INTERNAL CHAIN OF CUSTODY

10/20/2008 2:52:25 PM

Order ID: 270801086

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

L14651

Duluth, MN 55802

(218) 625-2337

Samples collected 9/23, 24, 25/2008

Phone: (218) 625-2332

EMSL Order: EMSL Proj ID:

Customer ID:

Customer PO:

Received:

270801086

BNSF Libby, MT 2008

EMRI78

10/20/08 12:21 PM

Cust COC ID

Invoice to Burlington N. Santa Fe/BNSF Rlwy (BURL54), 2500 Lou Menk Drive, Fort Worth, TX 76131

<u>Test:</u> TEM ISO 10312	<u>Matrix</u> Air	TAT:	3 weeks	Qty: 15
Acct Sts: BillingFrequency: With Re	Sisprsn: epodell port	<u>Logged:</u> <u>Sample</u> <u>Condition:</u>	jwyattpescador Acceptable Unacceptable	<u>Date:</u> 10/20/08
☐ Exempt from prep charge ☐ Exempt from lab opening: ☐ Exempt from layer/aliquot		Prepped: Analyzed: Data Entry Screened: Mailed:	Comments MD MD LL KL	Date: 10 20 08 Date: 4/4,1/08 Date: 11 408 - 4008 Date: 408 - 4008 Date: 408 - 408

Special Instructions

		The Marco		
Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270801086	270801086-0001	A BA-00044		11/10/2008 12:21:00 P
270801086	270801086-0002	8 BA-00045		11/10/2008 12:21:00 P
270801086	270801086-0003	BA-00046	Archive	11/10/2008 12:21:00 P
270801086	270801086-0004	С ВА-00052		11/10/2008 12:21:00 P
270801086	270801086-0005	D BA-00053		11/10/2008 12:21:00 P
270801086	270801086-0006	€ BA-00054		11/10/2008 12:21:00 P
270801086	270801086-0007	F BA-00055		11/10/2008 12:21:00 P
270801086	270801086-0008	BA-00056	Archive	11/10/2008 12:21:00 P
270801086	270801086-0009	BA-00057	Archive	11/10/2008 12:21:00 P
270801086	270801086-0010	· BA-00063 Damo	iged .	11/10/2008 12:21:00 P
270801086	270801086-00110	S BA-00064	IR RP	11/10/2008 12:21:00 P

EMSL Analytical, Inc., 107 West 4th Street, Libby, MT 59923

INTERNAL CHAIN OF CUSTODY

10/20/2008 2:52:25 PM

Order ID: 270801086

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

L14651

Duluth, MN 55802

(218) 625-2337

Samples collected 9/23, 24, 25/2008

Phone: (218) 625-2332

Received:

EMSL Order: EMSL Proj ID:

Customer ID:

Customer PO:

BNSF Libby, MT 2008

270801086

10/20/08 12:21 PM

EMRI78

Cust COC ID

Invoice to Burlington N. Santa Fe/BNSF Rlwy (BURL54), 2500 Lou Menk Drive, Fort Worth, TX 76131

270801086

270801086-0012 H BA-00065 11/10/2008 12:21:00 P

270801086

270801086-0013 I BA-00066

11/10/2008 12:21:00 P

270801086

270801086-0014 J BA-00067 RP

11/10/2008_12:21:00 P

270801086

270801086-0015 K BA-00068 RS, RP MAJON

11/10/2008 12:21:00 P

Versi

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

QA Type

Category

Analyzed BA-00044

Not QA 270801086-0001

Lab Sample Number Sample Type

EPA Sample Number

Air

Direct

Prep Counting Rules Field

10312

PARAMETERS

Effective filter area Indirect factor

385.0 mm2

1.00E+00 39

Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

39

Grid opening area

0.0130 mm2

Volume (L) or Area (cm2)

1915 L 3.97E-04 s/cc

Sensitivity (amphibole) Sensitivity (chrysotile)

3.97E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	39	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
c	0	0	0		
d	0	0	0		
e	0	0	o		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

OK OK Check Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00044_270801086-0001_ISO_11-04-08_D.xis

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name: EMSL27 Instrument JEOL 100 CX (30) Voltage (KV) 100 kV Magnification 19,000 X Grid opening area (mm2) 0.0130 Scale: 1L = 1.000 Scale: 1D = 1.000 Primary filter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field ▼ Filter Status Analyzed ▼				
Voltage (KV) 100 kV	Laboratory name:	EMSL27		
Magnification 19,000 X Grid opening area (mm2) 0.0130 Scale: 1L = 1.000 Scale: 1D = 1.000 Primary filter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field	Instrument			
Grid opening area (mm2) 0.0130 Scale: 1L = 1.000 Scale: 1D = 1.000 Primary filter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field	Voltage (KV)	100 kV		
Scale: 1L = 1.000 Scale: 1D = 1.000 Primary fliter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field	Magnification	19,000 X		
Scale: 1D = 1.000 Primary filter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field	Grid opening area (mm2)	0.0130		
Primary filter area (mm2) 385.0 Secondary Filter Area (mm2) 360.0 Category Field	Scale: 1L =	1.000		
Secondary Filter Area (mm2) 360.0 Category Field	Scale: 1D =	1,000		
Category Field	Primary filter area (mm2)	385.0		
	Secondary Filter Area (mm2)	360.0		
Filter Status Analyzed	Category	Field 🔻		
	Filter Status	Analyzed		

EPA Sample Number:	BA-00044		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1915		
Date received by lab	10/20/2008		
Lab Job Number:	270801086		
Lab Sample Number:	270801086	6-0001	
Number of grids prepared	5		
Prepared by	K. Barr	ies	
Preparation date	Preparation date 10/20/20		
EPA COC Number	L1465	51	

QA Type	Not QA	•		
F- factor	12			
Ting neso; i i i i i i i i i i i i i i i i i i i	tij Tir≨ (tigere).			
Archive filter(s) storage location	Westmon	ıt		
Grid storage location	2708-EMR-9	6, A		
Counting rules	ISO (Air or Dust)	•		
ir sample type – air, is there loose material or debris in the cowl?	No	•		
Prep	Direct	•		
Analysis date	11/4/2008	3		
Analyzed by	R. Pescador			

Recording Rules:

Stopping Rules:

Estimated # of GOs

≥ 3:1	•	Minimum Aspect Ratio	0.002.1	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
nor	ie .	Minimum Width (um)	7	Maximum # of GOs
			50	Maximum # of Structure

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

BA-00044 EPA SAMPLE ID: LAB SAMPLE ID: 270801086-0001

Sample Type Air Count Rule 10312

QA by:

Prep Direct Not QA QA Type

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

L. Ramowski 11/11/2008

K. Lusher 11/28/2008 QA date:

Maximum # of	Grid Op	enings Reached	-Complete current GO the	en stop.
--------------	---------	----------------	--------------------------	----------

Grid	Grid	Structure	No. of Structures Dimensions (a)			Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GC
Gilu	Opening	Туре	Primary Tot			dentification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND	Water Park Park	15 17 Jan	14	**************************************	200 20	2007	1737	2000		i i i ferre de	W. Chr.	i da k	24.00
1	J3	ND	30 5 4 6 5	· P	-/400	\$3505 SLOTE		3.2	48.73			2.54	40000	W. a.	230000
1	J5	ND		340	a called	****	10.4	4.0	100	15, 445	16. 16. 16. 16. 16. 16. 16. 16. 16. 16. 16.		A STATE		1000
1	J7	ND	2.74	2.4	To the state of	Water Commen				4.77			100	294 A	200
1	J9	ND	10 May 18 18 18 18 18 18 18 18 18 18 18 18 18	经 25年	72.77		100		在推 的	19			100		1.7
1	12	ND	11 12	Was live of	100	7.5			(#15C	100		有效性		et sale	100
1	14	ND		41 Tongs				2,770	-	4 Plans	and the second	1985	100	納州	Constitu
1	16	ND	THE RESERVE	医线 经外汇		4.00	100	11.	25.73	2.00 C		100			
1	18	ND			403	We say	3.966	100							4 18 1
1	110	ND	SEPTIME TO SEE	17 Sept. 3	11175	100	4472	1.0	400	4.12.74	1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1	*	291.5	Diggin.	1,00° (455 b)
1	H1	ND	200	14 14 E			34 700		为 实现	新杂数	18 July 18 Jul		1200	0.	hall the
1	H3	ND	25 992 8.33	eder Live	i de de la compania del compania del compania de la compania del la compania de la compania de la compania de la compania de la compania de la compania del la compan	Selfer V	*	1,412		纳金色			100		1800
1	H5	ND				No. 10	the state		***	100		1984	100	100	11,000
1	H7	ND	4000		124.50	A Transco	为证明 性	24.95		377		(2727)4	94.5	A GARAGE	THE CALL
1	H9	ND	Off an art is	81%+ (550,±50)	77 T. 17 T.	Section 1	\$ 100		78.4.21	F		100	14		.n
1	G2	ND		74 - 11			A COLUMN	14.34	1.00	10 m		1.00			100
1	G4	ND		10.00	100	Note that			7.3	0.00		ine of #	1377		
1	G6	ND	7.5	rei e		Market	101 134	A 1 2 20	1		Total II	100			色蓝花镜
1	G8	ND	1877/08/24	SAT PAGE.	- CART	A CARCLETON NO.	SECTION AND	12.00	7 1 7 PM	4.14			Section 1	ileit alle	eritable di
1	G10	ND			2. 2. 3. arr.	(BODE TO SE	1400			Part of the				11.7	71. Care
1	F1	ND	Cartilla Salata	48 Sept. (4)		200			S 12 12						
1	F3	ND	Market Street	tras Desertion	100	MARKET ST.	Marie Sec	14,34	40.00	1254	page 1			17, 19	
1	F5	ND	77 EC		C. Treston		40.00	2.00	18.00	3405	4.00	440	127	20.72	
1	F7	ND	Medical Co.	cities and man	Tall 18	A SECRET STORY		2 Con 19	44.64	200	Control of the	1994	9.76	A COLUMN	72.00
1	F9	ND	Section 1	44.5		190	14.5		genter.	3.744	and the second of			100	
2	12	ND	A STATE OF	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100000	a medicine est	3321.43	200	feetly)	a special		2500	200		70
2	14	ND	1000		5.00	d April 1	19 (1)		6			10.7	200	1440	
2	16	ND	VALUE OF	And Continue	- 44,140,5	100	Service.	44.83	12.000	9.32	(a) (b) (b) (c) (c) (d) (d) (d)	Fig. 1. Supplied	W. Warra	e de la company	entra estada a
2	18	ND	WARMED !	12. 2.0	4,947,7	a artista con	44.375	47.5	Parage.	100	1700 - 17 Tolking 1980	100000	644.7		Part 1
2	110	ND	2012 Tel. 1	Name of the same	4 272414	100027000	35. (5)	1.0	30406	76.50	10 1 2 2 2 4 A		10:03:00		
2	H1	ND	Set Ares	33.	- 73479		Sparter.	91.6	196.5	September 1	Market State of the Control of the C		200702-5		14 May 2
2	НЗ	ND -	100000000000000000000000000000000000000	30-44 (au - 18	1000		\$100 miles		460.00	1000		100	4 5 6 6	e de la comp	
2	H5	ND	Market 12	10 10 620	1000	105,7060e-2-35	7.5		1000		200	100		Witter:	- 1
2	H7	ND	CONTRACTOR OF THE PARTY OF THE	Section 1	10000000	S Cartinate Contract	ya Galgara CVII alia kal	12569	2000000	100	100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to	100000	2		120
2	H9	ND	Grand Section 2	General Constitution		S. Daniel S. Commission	#95 . h	1000	200,124	1000	enstructive transport	100000	28405	er erver	300

2 G4 ND	
2 G6 ND 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
	60 S. C. S. S. S. S. S. S. S. S. S. S. S. S. S.
2 G8 ND	100



SAMPLE ID

EPA Sample Number

Status

QA Type

Analyzed BA-00045 Not QA

Lab Sample Number 270801086-0002
Sample Type Air
Category Field

Prep Direct Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

1915 L

3.97E-04 s/cc

3.97E-04 s/cc

Recording
Rules:Min. ARMin length (um)Min width (um)≥ 3:10.5none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 39
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0	-	
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00045 270801086-0002 ISO 11-05-08 D.xls

11/28/2008, 1:51 PM

FILE NAME: BA-00045_270801086-0002_ISO_11-05-08_D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed 🔻		

COMMENTS

EPA Sample Number:	BA-000)45
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1915	5
Date received by lab	10/20/2	800
Lab Job Number:	. 270801	086
Lab Sample Number:	270801086	6-0002
Number of grids prepared	5	
Prepared by	К. Вап	nes
Preparation date	10/20/2	800
EPA COC Number	L1465	51

Analyzed by	R. Pescador		
Analysis date	11/5/2008	3	
Prep	Direct	•	
If sample type – air, is there loose material or debris in the cowl?	No	~	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-9	6, B	
Archive filter(s) storage location	Westmon	t	
The material design in the const	te i) is rigini, te		
F- factor			
QA Туре	Not QA	•	

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio	
0.5	0	Minimum Length (um)	3
nor	ne .	Minimum Width (um)	

75 62 5 T	Target Sensitivity GOs required to reach target sensitivity
	Maximum # of GOs
50	Maximum # of Structure
7	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

٧

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

EPA SAMPLE ID: BA-00045

LAB SAMPLE ID: 270801086-0002

Sample Type Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: K. Lusher QA date: 11/28/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure		d-Complete tructures	Dimens				Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	11	ND		1,24,275,3	4.5.	TOWARD TO SE	1.44	WEST PARTY	48.5	terral s					1 1 2 2	
1	13	ND	1.7	SON A			2.40	100		2	11000			334.0		
11	15	ND		42	March 1979		100		3. P. C.		14	STREET SPECIAL PRO		64 93	11.00	
1	17	ND			17000		100	92.14 jill	and the	4.						design.
1	19	ND			100	Page 1	7.17.0	200		心概		3 (Q4) T (1)		200	3700	
1	H2	ND	4				- 100		3 3 100	70 S.Y		建筑		2.254		
1	H4	ND	Exercit	3.4	COSTUPE		7 T T T T T T T T T T T T T T T T T T T				40 8 5			100	102.4	100 m
1	H6	ND		7778 mg s	18464		1.00	Sec.		200				10.00	100	A Design
1	Н8	ND		100		N-126-4		destrict of		40	-100			7.7	10. 21	
1	H10	ND	200	144	i je je je			20.0			4 (4)	40.000	100 10 100	+ 9 + 9	100	
11	G1	ND	*	100	1, 5, 4		100		7. A. J. S.	3.4	4.4	Language property		200		560 P. C.
1	G3	ND		16.7103	150,500	X () ()			Argini.		1000		100	100		
1	G5	ND			13.40						28.2.9		100			
1	G7	ND	10 K 10					774	343.1	25 10	afr.			20.0		
11	G9	ND	TIP Office	**********	200	400 S. 3.2	7.3	States.	1000	and offer a	30.44			100	0.00	
11	F2	ND	The State of the S		1 4 T			(4)			2.7/2			- 3		P. C. Call
1	F4	ND		(2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1								25 C. C. C. C. C. C. C. C. C. C. C. C. C.				
1	F6	ND					10 (10)		A-201	34	100	The second secon				
1	F8	ND		a production of the	2 and 2 and 2	44 Y 37	1.00	et in the	a de la composición della comp		4.00		22 144			9
1	F10	ND			No.		90.00								468	e es a company
11	E1	ND					100	900	100 m	90.5/45.9	4.000	The second secon		100		a Control
1	E3	ND ND			Children Control					40.00				4		Artist Co.
1 1	E5 E7	ND	100					(Car 1)			10			a salah		
1	E9	ND ND	77.5												4.0	
2	11	ND			And the second			grade and the second	200							
2	13	ND	50000000	100	2000				0.00		14 (15)			7.0		200
2	15	ND			10.53.40.5	10000		200	7000	44.75.7	3 30 6	A STATE OF THE STA				and the same
2	17	ND		100000000000000000000000000000000000000	COLUMN TO STATE OF	100		4466	10.5	Mark Control				100		# 1 m
2	19	ND		and the second	and Contract	40000	24.818.8		Sept.	NAME OF THE PERSON NAME OF THE P	a production		n Alexandr	200		
2	H2	ND	Fig. 6 days	A STANDARD		Augustus a		Profit Charles	1996				200 E	2041.002		
2	H4	ND	*	41.00			500	and the second	Desire.			estable of the second				
2	H6	ND	-11-2			**************************************		Acres de La	Life Control		7.47.79		12 THE RES		eren eren eren eren eren eren eren eren	r terbirah
2	H8	ND			100000			100	0.00	100			Contract Con			
2	H10	ND	100		4.00				A STATE OF THE STA							
	1110	עווו ו	SECTION SECTIONS	1 (5 M 7 (5 M) (5 M)	Long to the Party of the	Date of the second	N. T. Committee State St		I of the second	AND STATE OF	1:10年的海拔		5967年7年7年7年	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

2	G1	ND	
2	G3	ND	
2	G5	ND	
2	G7	ND	



SAMPLE ID

EPA Sample Number

Lab Sample Number

Status

QA Type

Analyzed BA-00052 Not QA

270801086-0004 Air

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39
Grid opening area 0.0130 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

4.67E-04 s/cc

4.67E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	39	50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	ОК		4

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td> </td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td> </td></dl<></td></dl<>	<dl< td=""><td></td><td> </td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00052_270801086-0004_ISO_11-05-08_D.xls

11/28/2008, 1:53 PM

SA

FILE NAME: BA-00052 270801086-0004 ISO 11-05-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27	
Instrument	JEOL 100 CX (30)	
Voltage (KV)	100 kV	
Magnification	19,000 X	
Grid opening area (mm2)	0.0130	
Scale: 1L=	1.000	
Scale: 1D =	1.000	
Primary filter area (mm2)	385.0	
Secondary Filter Area (mm2)	360.0	
Category	Field 🔻	
Filter Status	Analyzed 🔻	

EPA Sample Number:	BA-00052		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1626		
Date received by lab	10/20/2008		
Lab Job Number:	270801086		
Lab Sample Number:	270801086	3-0004	
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	10/20/2008	
EPA COC Number	L1465	51	
Number of grids prepared Prepared by Preparation date	5 K. Barr 10/20/2	nes 008.	

	T		
Analyzed by	R. Pescador		
Analysis date	11/5/2008		
Prep	Direct	•	
it sample type – air, is there loose material or debris in the cowl?	No	•	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-96, C		
Archive filter(s) storage location	Westmon	t	
k toggaden er en er Bellik kenne er en en er en er en er en er en er en er en er en er en er en er en er en er en er en er en er e	gara jedinika		
F- factor	1		
QA Type	Not QA	~	

Recording Rules:

Stopping Rules

Recording Rules.			ixuies.	Stopping r	tules.
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
	0.5	0	Minimum Length (um)	8	GOs required to reach target sensitivity
	non	e	Minimum Width (um)	8	Maximum # of GOs
				50	Maximum # of Structure
	F-fact	or C	alculation:	8	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

BA-00052 EPA SAMPLE ID: LAB SAMPLE ID: 270801086-0004

Sample Type Air Count Rule 10312

QA by:

QA date:

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

L. Ramowski 11/11/2008

K. Lusher 11/28/2008

A second of the territory for the feeting of		は、 数数 Ma 2017、 参加 Trans (1994年) かんき かんき	of the factorial and the first of the factorial and the factorial	10
- Rasvingilm it A	# Crid I Inonings 🔾	aachad Camalati	e current GO then stop.	77
IVIANIHUIII # U	a Gitta Opennias ix	cacheu-combieu	s current GO then stop.	20

Maximu	Maximum # of Grid Openings Reached-Complete current GO then stop.														
Grid	Grid	Structure		Dimens	ions (a)	Identification		Mineral C	lass (b)		1 = yes, blank = no				Fract. GO
Gild	Opening	Type	Primary Total	Length	Width	Identinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	G1	ND							12 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	700		30 m	200		
1	G3	ND	3 4 3 PM			*			27.25	1400				* 3	4.3
1	G5	ND	14.74.2	# 1 T				With the	9733		是		排除		建物设计。
11	G7	ND	4.27.46	4.00		A Francis	78372		沙埃基	6		12.7	1.00		
1	G9	ND						36-12-5			A AND THE STATE OF	2.4			
11	F2	ND		7.4	# 12 A			1000				S. Allen Grade	Arra C	的	
1	F4	ND	11.95 对 3.65	31.2						0.994	的类似的		717	8 B (#)	美 麗 [17]
1	F6	ND			# 5.04		*******	27.2	9.00	230 S	Marine Services	20.00	(10 Y)		K 967
1	F8	ND	100		12.5	T 10 10 10 10 10 10 10 10 10 10 10 10 10		4.5	1,020	- 1		4/44/3		200	
11	F10	ND	10 mm	70.2	1000	Appropriate Control	Art in		3. N	1399	Side Company	27		对字形	
1	E1	ND	1. (4.0)	1413 14 15		4.000		多类的	- 24			N. 6.	A 146	经技术	'Yang'
1	E3	ND			and the state of			94. 1	K	(60)	新作品。	0.88%	Control of	Lexio	
1	E5	ND	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			- Farmer 1		编码字号					100	1 000	96.43
11	E7	ND		24 A		A STATE OF STATE OF		3-37	100	100		235 773		13.7h	
1	E9	ND		593.55	732.00	H-746-FFE		365 775	134.6			e soprati,			
11	D2	ND	15 m		2.00	ALC: ALC: Y	area. Y		14,000						
1	D4	ND	1000	66 J		1778, 457		4-5-6	40.00	48.5 (5.6)	\$500 p. 100		100	100	
1	D6	ND_		Alleria .				41.5	100	100			200		
1	D8	ND	6.73		A Parameter	Same Same	Winds	1300	A	esil, i			4,35	444.	Projection of
1	D10	ND			2000000	79-8-2-99		3000	100	2571424		1.00		N.	
1	C1 .	ND		9-000				3000	100433			110,10		1000	100
1	C3	ND	3300			2.21		(10 m)	4.5		新建筑 的产生。		120		21220
1	C5	ND	19 34 36 36						7 1				100	4.00 Ty.	
1	C7	ND	3488 6277		10.00%	o de la Maria	Add to the	State A. Sep	4.634	1.11	Experience of the second	74,34	6.5	100	
1	C9	ND			2.00		A(5,5	7975 - C	2000	70 (6)		71		100	
2	11	ND	2000 3000	30.5	1.27.2	1.00		30000	100	多数學術			3.0	100	
2	13	ND	2022 22 404		2.74	L PROBLEM	32,444	# S	1000	* (a)		200	100		
2	15	ND					14		10 A 10 A 10 A 10 A 10 A 10 A 10 A 10 A						*# (4)
2	17	ND		100										10215-0	200
2	19	ND	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					1801	100		em assessment	* **	26		24.5
2	G1	ND			200				100			100			
2	G3	ND		0.6				10-20-00 GM		100	Control of the Contro	100	254,043		
2	G5	ND		36.04				100		10000					
2	G7	ND			a de la companya de l			1	7						Seatows/
2	G9	ND _		# 1				100 P. Steil		* 10.5					

2	F2	ND	
2	F4	ND	
2	F6	ND	
2	F8	ND	

Versic

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed EPA Sample Number BA-00053 Not QA QA Type

Lab Sample Number Sample Type

Air Category Field Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 1619 L

Sensitivity (amphibole) Sensitivity (chrysotile)

4.69E-04 s/cc 4.69E-04 s/cc

Recording Rules:

Min length (um) Min width (um) Min. AR ≥ 3:1 0.5 none

270801086-0005

Stopping Rules:

Target S Max GOs Max N 0.0024 39 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK

Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	ď	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00053 270801086-0005 ISO 11-05-08 D.xls

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL2	7		
Instrument	JEOL 100 CX (30)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field	•		
Filter Status	Analyzed	•		

EPA Sample Number:	BA-00053		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1619.0		
Date received by lab	10/20/2	800	
Lab Job Number: 270801086			
Lab Sample Number:	270801086	3-0005	
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	008	
EPA COC Number	DC Number L14651		

Analyzed by	R. Pescador			
Analysis date	11/5/2008			
Prep	Direct	•		
ir sample type = air, is there loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, D			
Archive filter(s) storage location	Westmont			
Engelt sit groß besäß wirk gene engleit de Ledgi 3595	de des regions.			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

	11223	******	1	OLD PRINTED .	10.00
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.50		0	Minimum Length (um)	8	GOs required to reach target sensitivity
none		ie .	Minimum Width (um)	8	Maximum # of GOs
				50	Maximum # of Structure
	E fact	~- ~	algulation	. 8	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

V

COMMENTS

EPA SAMPLE ID: BA-00053

LAB SAMPLE ID: 270801086-0005

Sample Type Air
Count Rule 10312

Prep Direct QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by:

Data Entry date:

L. Ramowski

11/11/2008

QA by: K. Lusher QA date: 11/28/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

	Grid	Structure		d-Complet tructures	Dimens				Mineral Cl	ass (b)			1 = ve	s, blank :	= no	Fract. GO
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	12	ND	18 1 2 T		-5 - 3000		2.40	1000	35(12)36		31.0 2.00	and the second second	-30 pf (Medical Control		*0 \$1550 XX
1	14	ND	100	*	201 (C. 1988)	549 W - 1	43.00	0.00		4-80 %	1 Sec. 19		45.45		E1-67	
1	16	ND			400	Law South	25.8 (17.1)			7.40	20 e 名		10746.3		100	- L
1	18	ND		-5-13 July 84	200		With the second	14 2 14 14	ACME.	X (4)		5.445 966	25.00	god.	300	1.05
1	I 10	ND		44.77			All areas	edest in M		17.2	5.85		F 47 (1)	100	7072	5.48
1	H1	ND	car of the				district			2.12			-12/04/05 A	1 0.4	1	
1	НЗ	ND		77. TO 10.		(f. 1794)	70 B 10 C		100		9.0		40.5	William .	7 3 6	
1	H5	ND			* ***	ika di bari	# Arter	7,96	100				12 13 12		74	Service of the servic
1	H7	ND					Europe Contract		14.				10.00		\$14.	
1	H9	ND		- 1 Table	1.00	day or	1980 - W.	3675	#250	40.0			12.98 S.J.		51,110	
1	G2	ND					建筑				233		Section .	944	¥ 15-54	27,500
1	G4	ND	1000	5	1,000		\$867 A.			2240	this #	26.0			4.7	3
1	G6	ND		4		a design			173474	3 15 15	44		10000	300.45		
1.	G8	ND	No.	4 - 4	7.0		# 35 (E.S. 17)	in a Control	18	44.2%			220	24.55 A		
1	G10	ND		at the second	10489	10.25 Te		- 14 3 483	100000					3.76		44
1	F1	ND			24.4			400	100	100			\$400 m	1	100	
1	F3	ND	# 10 m				2			344			12.00		ac tall	
1	F5	ND		11-11-14-1	41.5						20.61		ST 1880			
11	F7	ND			+ 1 5 5	Section 1			36 C C C		F42.	A SECTION AND A SECTION ASSESSMENT	48 a 1 3.	3. d		100000000000000000000000000000000000000
1	F9	ND				240-3-73	678		100 74 64		Marie Control		100		4 (1.5)	
1	E2	ND		200		Per Diagram	100 m				AND Y		100000			
1	E4	ND						7			3.3		Control of the		is hegy	
1	E6	ND			2.00				100 000		100		APP (Fig.			7.7
1 1	E8 .	ND	24.0		1000	Personal Control		4.4			新加州					
1	E10 H1	ND ND					English		100			2.2		AND SECTION		
2	H3	ND		14 Y - 14 A								4.75.2 (100.179)		Marie Carlo		State of the state
2	H5	ND		54524				200	Section 1		AMER AMERICA		Control of the Contro			7 1 7 17 18 18 18 18 18 18 18 18 18 18 18 18 18
2	H7	ND	Barting and the		100		Programme and the second				e e e e e e e e e e e e e e e e e e e	100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 mg 100 m Tanggan panggan			1	
2	H9	ND		200	NAME OF TAXABLE PARTY.	and the second		7.07-9.00	William Co.		*#		The Control	730 300		August
2	G2	ND ND					200		400,000,000				19.00	42.2	4.4	
2	G2	ND	100		100000	A PARTY NAMED IN	are the	1.0	2.29					100 m 20 m	1000	100000
2	G6	ND		4. 1. 1. 1. 1.	at the same		Logara and		Total Section					ercification (%)	NA Process	1 ⁴
2	G8	ND	C 35		1.0		CAROLINA CONTRACTOR OF THE CON	11.7	200				2011-2			7
2	G10	ND	And the second						- 10					5 (13 (14 (14 (14 (14 (14 (14 (14 (14 (14 (14	Section Section	
L	010	I NU	MANAGEMENT	1.39(3.435)46(3.65)			TVERS CONTRACTOR	10 10 10 10 10 10 10 10 10 10 10 10 10 1	I was to		海通过的现在分		1 3	2 4 3K 3K 3	*64 P.1-1588	** *** ** ****************************

.2	F1	ND	
2	F3	ND	
2	F5	ND	
2	F7	ND	



SAMPLE ID

EPA Sample Number

Status

QA Type

Analyzed BA-00054

Not QA 270801086-0006

Lab Sample Number Sample Type Category Prep

Air Field

Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2
Indirect factor 1.00E+00
Number of Grid Openings (amphibole) 39
Number of Grid Openings (chrysotile) 39

Grid opening area 0.0130 mm2
Volume (L) or Area (cm2) 1634 L
Sensitivity (amphibole) 4.65E-04 s/cc

Sensitivity (chrysotile) 4.65E-04 s/cc

Recording
Rules:Min. ARMin length (um)Min width (um)≥ 3:10.5none

Stopping Rules:

 Target S
 Max GOs
 Max N

 0.0024
 39
 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	О		
е	0	o	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK
Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

FILE NAME: BA-00054 270801086-0006 ISO 11-05-08 D.xls

FILE TYPE: Original •

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX (30)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field 🔻			
Filter Status	Analyzed			

EPA Sample Number:	BA-000	BA-00054		
Sample Type	Air	-		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1634.	0		
Date received by lab	10/20/2	800		
Lab Job Number:	270801086			
Lab Sample Number:	270801086	3-0006		
Number of grids prepared	5			
Prepared by	K. Barr	es		
Preparation date	10/20/2	008		
EPA COC Number	L1465	51		

Analyzed by	R. Pescador				
Analysis date	11/5/2008	11/5/2008			
Prep	Direct	•			
ir sample type – all, is there loose material or debris in the cowl?	No	~			
Counting rules	ISO (Air or Dust)	•			
Grid storage location	2708-EMR-96, E				
Archive filter(s) storage location	Westmon	t			
Egipt herzen au ein han. Martinatur	. 176. of 18				
F- factor					
QA Type	Not QA	~			

Recording Rules:

Stopping Rules:

Estimated # of GOs

	,			
≥ 3:1	•	Minimum Aspect Ratio	Target Sensitivity	
0.50		Minimum Length (um)		GOs required to reach target sensitivity
none		Minimum Width (um)	8	Maximum # of GOs
			50	Maximum # of Structure

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00054 270801086-0006

Sample Type Count Rule Air 10312

QA by:

QA date:

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

L. Ramowski 11/11/2008

K. Lusher 11/28/2008

Grid	Grid	Structure		tructures	Dimensions (a)		top.	Mineral Class (b)					1 = ye	s, blank =	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	12	ND	4.23.4	Carlotte (195		Y 47 1 35 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	CAR MARKET	4.20	1	Solve Se			192.20	200		27.5
1	14	ND	120	40.75	TOTAL STATE		100	342	ii vii			Caral Salation	100	(10.00)		GREEN
1	16	ND	A. 13			1.10	The Contract of the Contract o	44.	4.60		(J. 1)		***************************************	100	19.3	经存款
1	18	ND				in the state of			3 4					1.0		2.6
1	I 10	ND	41		1477.4		1 74 10 6	154.51			100					
1	H1	ND		er gegreening	1000		-277	100	第3000			(二) (13.50 mg/s)	1997, 29, 8	22.00		10.76
1	H3	ND		2.0	第二章	17 m		400° 8			24		V (1)			
1	H5	ND	4.44	5,494.39	25 T			2(20)(2)	a (5) (5)		4.2			1000		#15 1 K
1	H7	ND				- 15	100	30.24	基本公文				1000	2.32%		
1	H9	ND	15 作成集		STATE OF	25.00		Mark.	(To 10)	100	7.5		100	TOTAL STATE		96) R. H
1	G2	ND	7. AL 14. S	CENTER.	(274-137)E		44000	Marin P	15.00	8.4.54%					6 42.430	
1	G4	ND		400	3.00 A 1 C				W 1873	743	1.00	West Profession	437.32			
1	G6	ND		The plants of	# C - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	for the state	100	100	# 10	VV/T	2100		1.07	10		
1	G8	ND	-713,944	32 Feb. 300		Large Cont	10.00	4.5		348 Dig	3.6		1 1 Marie	XX 842	4479	7 to 150
1	G10	ND	1000	er services		1.50	100000000000000000000000000000000000000		Marine.	151000	400	Company of	15.00	1-0.00		A Part of
1	F1	ND			All the second		1000000	3000	2000	1.4		Search State Control	100	2.2		
1	F3	ND	5 4 2 4	2017		a de la companya de l	1000	300	200	2627.5			1000		C(Sa)	La estado de
_1	F5	ND			(0.00 pt.)		4-34-6	34.0		6750	44.6		100	1.00	66 CAL	
1	F7	ND		30 - S - S - S	poers -	1,500	3782	September 1	9.0	100	Con try			4.54		
1	F9	ND	71.774	578, W.F.	1945	16%		200			100		1.00	1000	A Visit	
_1	D2	ND	The state of the s	\$4.52 F.S. (A)	2014		1123		F (1)	1000			i dana	(5,03)	4 (18	F. C.
1	D4	ND		A Property	Page 1	A Barry II		4400	A 10 - 3	1000				Carlot Sales		7.0
	D6	ND		Part Control	74 A	200		307 113 147	- 1 c			**************************************				
_1	D8	ND			diam'r ar		5395.06	28000	PC 318 7 31 19	1,2,45%	35.0	Mark Section		W. Freder		
1	D10	ND			ALC: N			(A)				rich Santa				and the second
2	J1	ND	1000	(A. 1.4.1)	1					× 200				22.8		
2	J3	ND	50000000		2000			1074	# 16 AF		11		399		SELECTION OF THE PERSON OF THE	
2	J5	ND						200		100		A CONTRACTOR OF THE CONTRACTOR			r 1 de 2 de	
2	J7	ND			964s (255)			200		2000年				100		A STATE OF THE STA
2	J9	ND		A						2.2	100	E. Commission		756		
2	12	ND		ever the same	2000-00-00-00-00-00-00-00-00-00-00-00-00			700		4.42	*3.40*					6 (1 _{1,11}
2	14	ND						100	100	667.0						
2	16	ND			PAGE.		2.4475 12.00	465			4.0		17.000			
2	18	ND	400000000000000000000000000000000000000	* ** * * * * * * * * * * * * * * * * *	2000		3 42 347 33	1000	A FEET	12.00	- 100		1	4 (4)		
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	2	G1	ND	
	2	G3	ND	
	2	G5	ND	
ſ	2	G7	ND	

1-05- 3EDV SL Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

EPA Sample Number

Status

Analyzed BA-00055

QA Type Not QA Lab Sample Number 270801086-0007

Sample Type Air
Category Field
Prep Direct
Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 Grid opening area 0.0130 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

1634 L

4.65E-04 s/cc

4.65E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N		
0.0024	8	50		

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0	ļ	
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

	· /				
Bin	LA	OA	<u>C</u>	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	đ	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00055 270801086-0007 ISO 11-05-08 D.xls

11/28/2008, 4:10 PM

SM

FILE NAME: BA-00055 270801086-0007 ISO 11-05-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27
Instrument	JEOL 10 (30)	0 CX
Voltage (KV)	100 K	V
Magnification	19,000	Х
Grid opening area (mm2)	0.013	0
Scale: 1L =	1.000)
Scale: 1D =	1.000)
Primary filter area (mm2)	385.0)
Secondary Filter Area (mm2)	360.0)
Category	Field	•
Filter Status	Analyzed	•

EPA Sample Number:	BA-00055		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1634		
Date received by lab	10/20/2	800	
Lab Job Number:	270801086		
Lab Sample Number:	270801086	3-0007	
Number of grids prepared	. 5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	008	
EPA COC Number	L1465	51	

· · · · · · · · · · · · · · · · · · ·	r			
Analyzed by	R. Pescador			
Analysis date	11/5/2008	3		
Prep	Direct	•		
it sample type – air, is there loose material or debris in the cowl?	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-9	6, F		
Archive filter(s) storage location	Westmon	t		
There is a constant.	4 = 1 E 1 A			
F- factor				
QA Type	Not QA	•		

Recording Rules:

≥ 3:1

Stopping Rules:

		1		l
3:1	▼	Minimum Aspect Ratio	0.002	Target Sensitivity
0.5	0	Minimum Length (um)	***************************************	GOs required to reach target sensitivity
none		Minimum Width (um)	8	Maximum # of GOs
			50	Maximum # of Structure

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

8...

Estimated # of GOs

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

EPA SAMPLE ID: BA-00055

Sample Type Count Rule - Air : 10312

Direct Prep QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date:

LAB SAMPLE ID:

L. Ramowski 11/11/2008

QA by: QA date:

K. Lusher 11/28/2008

				O then stop.

270801086-0007

Vaximu		d Openin	os Reache	d-Complet	e current	GO then s	top.	111/20120				ı						
Grid	Grid	Structure		tructures		sions (a)			Viineral C	lass (b)			1 = ye	es, blank	= no	Fract. GO	error	GO
Gna	Opening	Туре	Primary		Length		identification	LA		C		Comments		Photo		Chrys.	check	ci
1	G1	ND	112.3		7.3	34.30.00.00	and that a	Panis :	in the second	22	200	100		C1117440	200		ок	
1	G3	ND		20.27			Service St.		au de para la	22.229	الوارسوا		2424	ALTER	12 MILES	and the same	OK	
1	G5	ND	WE ST	100 m			1000			and the	9.69.0	10 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 May 20 Ma				*****	OK	
1	G7	ND	MAC AND	100	1000	125.04	San Sec.			Same	0.07 E	Carlos School				2307£50	OK	
1	G9	ND	746 194	Francisco	- A		Maria Company	44 AM			4/365					Carrer	OK	
1	F2	ND			22.744.789	WAR 18	A CONTRACT	Charles	40.134	7000	W-4 87	7 A 70 A 70 A 70 A 70 A 70 A 70 A 70 A				Side of the	OK	
1	F4	ND		APPORTS			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		25 2.34			To A MEN STATE	120 140			1183174	OK	
1	F6	ND	Self-way		170 10.40	Paraterials.	Address (CA)		Sign of the	4.4	405 %	Halle 2000 and	0.7	400			OK	
1	F8	ND	234	April 1			1237	100	0.044	- m-6	Wat In	9-15-15-2 8 -5-26-21-4	12 (4) (5)	607,41	7623	5 1 cm	OK	
1	F10	ND	376 4X	Marie et			\$460 En. 897					7. Edward (1965)					OK	
1	E1	ND	for participation in	545 As	A. A.	74.454	220000		ASSESS OF STREET			All the second of the second					OK	
1	E3	ND	14000	F 27 d 5 142 .	Harris III							HARLES AND THE					OK	
1	E5	ND					College College					Minimum Committee					OK	
1	E7	ND		100		477			1.00	Market		Security and a second				\$16.04 Accord	OK	
1	E9	ND	6.8° (* 12°				SELECTION AND		320.48	O THE	2400					\$30°5325	OK	
1	D2	ND	A/80 SS.		744	33 May 10	5.487.87.1	5-54-500	1 a	100	1,2450	ELGGERAL CONTRACTOR	17273	200	100	3 1 3 W. S.	OK	
1	D4	ND	100 Sec. 2003		22-75-44	Salar and		394	10.50	42543	414 355	CANCEL CONTRACT	25.00	1186	V 4.5	Personal St	OK	
1	D6	ND	3234-31	Supplication.		Transport			SPANS	System	Signal.	1988 C. S. S. S. S. S. S. S. S. S. S. S. S. S.	100	refile.	1000	2000	OK	
1	D8	ND							(4) Sal	x 14.24	Page 1	AND CONTRACTOR	A STANK	10000	7.00	- Contract	OK	
1	D10	ND		5-14-14								September 1					OK	
1	C1	ND					g versors						2811.04	300.0426	1000	Market 1	ОK	
1	C3	ND										AND COLUMN				MANUTES I	OK	
1	C5	ND	22339930	More	100	14 M	#74.5555#	2740.20									OK	
1	C7	ND						No.		4.145	0450	Milder State Co. 1979			THE PERSON NAMED IN	WHEN'T	OK	
1	C9	ND		1770000000					1700	100	10			1-03-000 -0000000	Carried Co.	8028.7	OK	
2	J2	ND		420 444 8			A CONTRACTOR	120000	2.1	44	243	AND STATES		A SECONDAL CONTRACTOR	Topical and an arrange of	Parallel St.	OK	
2	J4	ND		25.00		100						A A STATE OF STREET		20500	11 270 120 120 120	4 (4 (4 E)	ΟK	
2	J6	ND	North C		- 310											1.00	OK	
2	J 8	ND		4.00			Mary and the	400 PM	22 48 4	2.00	V // 1	2000 A 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO 1000 TO	757			2 10 10 M	OK	
2	J10	ND	W. Carrier									ASSESSED BOOK OF THE PARTY OF T			7	100 E 100	OK	
2.	H2	ND					851									To the Court	ok	
2	H4	ND	To District Co. Inches				Eliza Zaspa IV		24/250		- April 12					PROCESSION	OK	
2	H6	- ND		1874							200		1	- Professional Control	34,340,000,000,000,000	100	ok	
2	H8	ND	A State of the Parish of the P	-340	4	221	Total district on the deal office.					300	77-73	C. Charles Charles Ave. Co.	00000		ok	
2	H10	ND	350			100	SECOND AND SECOND Total Action of the Control of the C			92.000		110712		101613		OK		
2	F2	ND	200 120			25	Act of the second secon			3.0410	na me	The state of the s	Vaccoustication and a state of the	100	700-000-000-000-00-00-00-00-00-00-00-00-		ok	
2	F4	ND.	Transfer and the second	100	The second second	4.00	452 A HK		10.00	1,3454-2310311,41254		The state of the s	ALIAMONA PURA NACIONA	San San San	manufacture (Control of Control	THE SECTION	OK	
2	. F6	ND					Section 1		401140		46.0%			Action Control of the	20,020,000,000		ok	
2	F8	ND						970 Z.A.A.	5.032.5	10 34 24	100	en de la company					OK	
	 	 	Annual Control of the	and the section of th				4 - 525-14 7 (1270-2016) (1570)	THE SHARE STREET	TO SECTION ASSESSMENT	- Server and Server		- CONTRACTOR	4.0747.11.0467.	0.0425131-4-0228	CHEMICAL SPRINGER CHARLES	011	
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01-00- DEDVE

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

Versio.

SM

SAMPLE ID

Status Damaged
EPA Sample Number BA-00063
QA Type Not QA

QA Type Lab Sample Number Sample Type

2708 Air

Prep Counting Rules

Category

270801086-0010 Air

Field Direct 10312 **PARAMETERS**

Effective filter area Indirect factor 385.0 mm2 1.00E+00

Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile)

0 0

Grid opening area

0.0130 mm2 1170 L

Volume (L) or Area (cm2) Sensitivity (amphibole)

s/cc

Sensitivity (chrysotile)

s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024		50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

OK

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00063 270801086-0010 ISO 01-00-00 D.xls

FILE TYPE: Original

Stopping Rules:

Recording Rules: Minimum Length (um)

Minimum Width (um)

•	, 11	Target Sensitivity GOs required to reach target sensitivity Maximum # of GOs
	50	Maximum # of Structure

11 Estimated # of GOs

F-factor Calculation:

0.50

none

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

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Input for Ashing of Secondary Filter

Fractio	n of secondary	filter used	for ashir	1g

F-factor

Grid opening traverse direction:

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27	EPA S
Instrument	JEOL 10 (30)		Samp
Voltage (KV)	100 k	:V	Air voli (cm2), (cm2)
Magnification	19,000	x	Date
Grid opening area (mm2)	0.013	10	Lab Jo
Scale: 1L =	1.00	0	Lab S
Scale: 1D =	1.00	0	Numb
Primary filter area (mm2)	385.	0	Prepa
Secondary Filter Area (mm2)	360.	0	Prepa
Category	Field	•	EPA (
Filter Status	Damaged	•	

EPA Sample Number:	BA-000	63
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1170.	0
Date received by lab	10/20/2	800
Lab Job Number:	270801	086
Lab Sample Number:	270801086	6-0010
Number of grids prepared		
Prepared by		
Preparation date		
EPA COC Number	L1465	51

Analyzed by		
Analysis date		
Prep	Direct	•
in sample type – air, is mere loose material or debris in the cowl?	No	•
Counting rules	ISO (Air or Dust)	•
Grid storage location	-	
Archive filter(s) storage location	Westmon	t
Angelie Angelie (1905 en 1914). Angelie (1905 en 1905)	al it solojii je	
F- factor	1	
QA Type	Not QA	•

COMMENTS

damaged filter

BA-00063_270801086-0010_ISO_01-00-00_D.xls

EPA SAMPLE ID: LAB SAMPLE ID: BA-00063 270801086-0010 Sample Type Air Count Rule 10312 Prep Direct
QA Type Not QA

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/11/2008 QA by: QA date: K. Lusher 11/28/2008

Grid	Grid	Structure	No. of S	tructures	Dimensi	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.

Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Analyzed

BA-00064

385.0 mm2

EPA Sample Number QA Type

Status

Not QA

1.00E+00

Lab Sample Number

270801086-0011

39 39

Sample Type

Air

Number of Grid Openings (chrysotile) 0.0130 mm2

Category

Field Direct Grid opening area Volume (L) or Area (cm2)

Number of Grid Openings (amphibole)

PARAMETERS

Indirect factor

Effective filter area

1170 L

Prep 10312 Counting Rules

Sensitivity (amphibole) Sensitivity (chrysotile)

6.49E-04 s/cc 6.49E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping
Rules:

Target S	Max GOs	Max N
0.0024	11	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK	•	

Check Grand total

OK OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<≃.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00064 270801086-0011 ISO 11-05-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0,0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed T		

COMMENTS

EPA Sample Number: BA-000			
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1170)	
Date received by lab	10/20/2008		
Lab Job Number:	Number: 270801086		
Lab Sample Number: 270801086-0			
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	800	
EPA COC Number	L146	51	

Analyzed by	R. Pescad	or
Analysis date	11/5/2008	3
Prep	Direct	•
If sample type – air, is there loose material or debris in the cowl?	No	•
Counting rules	ISO (Air or Dust)	•
Grid storage location	2708-EMR-96	6, G
Archive filter(s) storage location	Westmon	t
t nem na standare politika politika. Romanie nem registrom 185	Kulta euka _n	
F- factor	7.1	
QA Type	Not QA	•

Recording Rules:

•

Stopping Rules:

And the second s				
≥ 3:1	•	Minimum Aspect Ratio	0.002.7	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
nor	1e	Minimum Width (um)	11	Maximum # of GOs
			50	Maximum # of Structure
F-fact	or C	alculation:	11	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

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Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

				ERROR CHECK
EPA SAMPLE ID:	BA-00064	Sample Type Air	Prep Direct	
LAB SAMPLE ID:	270801086-0011	Count Rule 10312	QA Type Not QA	OK - No errors found

 Data Entry by:
 L. Ramowski
 QA by:
 K. Lusher

 Data Entry date:
 11/12/2008
 QA date:
 11/28/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	a) Identification Mineral Class			Class (b	Class (b)			s, blank		Fract. GO
GIIU	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	l c	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J1	ND	14.50	100	The Samuel	10.00	1508657	Section Section	X	建筑		Parameter 198	1975.23		Section 1	10.55
1	J3	ND	14 MW			70.00	4 9 2	直接旅	110		3.6		4.72	100		
1	J5	ND	77.97				7. Best 25. 3		196		Car	34.4 7.4 7.73		0.75		200
1	J7	ND	10 A 10								1 1 1 1 1	Section 1.	60 - AL	25	24.4	
1	J9	ND		entra esta esta esta esta esta esta esta est	Adden di	442.3		4. 275.44	25 620	4.4	2.446		100			
1	12	ND			ero e y i	100		建 对在10分			1 × 3				45 bi	Sept.
1	14	ND			T** # 15.6	AND THE	33.45	34 37 35 44	-2.2	(A)	Supple 1	710 - 177 - 176 -				
1	16	ND			100	7. A 7. A 7.	**************************************	15.8 (1)	37.4		A Barry Co.	A Shirt and A Shirt		Park IV		14 . A . A . A . E
1	18	ND	14.60.72	14.	Sec. 375.	100	20 To 17 To 1	a deligitary	10 C 11	- Park	a received to		4.4	12.75		2.77
1	110	ND	5-34-57			60.2753	P11-7-7	6.7 公济	100	144	11/2	in the state of th	2 (200-27)	State Co.		1,400,400
1	H1	ND	344 A C	高老 子。	有数数	THE X	1960 million		3.834	1000				18,500	Service Acc	C 100
1	НЗ	ND	強烈。	2124	5 (1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1	130.51	8 75% (S. 20 al.)	等級	84.30				117	7,700		
1	H5	ND	147	***	5.4		Page 1		1.0	1 线流			30 m	200		1000
1	H7	ND	77-115-24				\$65.EX7	基础	S - 19	t time	4.10		(1.5 m)		洲铁	
1	H9	ND	100	教 教证证。		46.00	3650	6			1 24 3	ANTEN STATE			1427	
1	G2	ND	74	\$400	7. 17.0%	74.0	Market St.	344	12.3	V Stope	(神學(2)		100	34 34.5		
1	G4	ND	1000		25.72		583,500		APP 1	19.89	排程 和		27 (10) 440	种编制		er en en 🔻
1	G6	ND	1.00	Mark St	********** *		186	第323		100	KHY.			1		100 N 100 N
11	G8	ND	Copera and		MAC 3 SAM		94, W. C. 4. T. 1.	3014	22.2		1000	76.5	1.10	经学习 。	Hirt	4-12-65
1	G10	ND	100		光 多次 流	100000	digital property	建 节数	10.00		1 24 6 5	(C. 11.1)		2000	類認為	
1	F1	ND		Appendix	77.	72.5	Contract Con	36423	× 144,6				A STATE	2012		
11	F3	ND		4	9 113		2016 Pt.	特别的	1.00	g great			100		er en	7.57.42
1	F5	ND			7.7	经产品	Ter.		9.28.2		40000		42.0	100	196	0.50
1	F7	ND	Section in	Marie San			F (#1)	****	111	1467		W1:4	1404 6 1513	100		1, 10, 11
11	F9	ND	THE SHEET		. 计模	100			1.0		1.00			2000		
2	J2	ND			are and		Per de la companya della companya della companya de la companya della companya de	20 × 20 C	5529	1000	September 15			10000		
2	J4	ND	5795	(A) (A) (A)	Will		78789	\$ H M	75.00	4.00		Mer to the Later		17.7	Section 1	7
2	J6	ND			324		114.1	10 00000000000000000000000000000000000	200		1000	100 A 100 A	# - North P	1.07		***
2	18	ND	40.00		- 17 20 9	3,000,000	Sept 1		1000	100	1.50			3.0	1021	7.7
2	J10	ND				100	17	752.50		7 10 10	100	ter and the second	16 (CF) 12	fire ex		
2	11	ND	CALLS.		2-76 9 75 1	100	Sales Sales	45.4	- i4 mm	3 3 7 6				1,1		27.7
2	13	ND	Average y	W 24.	77.75		Annual Control	A-1004	3 2 5	1 2 3 14	100			3 4	4.00	And the second
2	15	ND	34. C.M.	P. Victoria		V. C. 1845	1 2 TO 1 1 TO 1 TO 1 TO 1 TO 1 TO 1 TO 1	第47条	20.6	4 39.34	e sind		100	7.34		
2	17	ND			wie Ing		Marie Co		4.12.0						- Burney	er ettelek
2	19	ND	120	April 1	- 100	40.00	0.00000	(Mr.248)	10.00	4 24 34	2 (2003)		10.0	100	4.0	100

2	H2	ND	
2	H4	ND	
2	Н6	ND	
2	Н8	ND	

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SAMPLE ID

Status Analyzed EPA Sample Number BA-00065 QA Type Not QA 270801086-0012

Air

Field

Lab Sample Number Sample Type Category

Prep Direct Counting Rules 10312

PARAMETERS

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 0.0130 mm2 Grid opening area Volume (L) or Area (cm2)

Sensitivity (amphibole) Sensitivity (chrysotile)

1178 L 6.45E-04 s/cc

6.45E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	11	50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK Grand total OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
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Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00065 270801086-0012 ISO 11-05-08 D.xis

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100 kV
Magnification	19,000 X
Grid opening area (mm2)	0.0130
Scale: 1L =	1.000
Scale: 1D =	1.000
Primary filter area (mm2)	385.0
Secondary Filter Area (mm2)	360.0
Category	Field 🔻
Filter Status	Analyzed 🔻

EPA Sample Number:	BA-00065		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1178		
Date received by lab	10/20/2	800	
Lab Job Number:	270801086		
Lab Sample Number:	270801086-0012		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/20/2008		
EPA COC Number	L14651		

Analyzed by	R. Pescador			
Analysis date	11/5/2008			
Prep	Direct	•		
If sample type – air, is there loose material or debris in the	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, H			
Archive filter(s) storage location	Westmon	t		
s and a section of the sum of the section of the se	% (6.\$1.75,Th / C			
F- factor	1			
QA Type	Not QA	•		

Recording Rules:

Stopping Rules:

CONTRACTOR PROPERTY.	≥ 3:1	•	Minimum Aspect Ratio	0.002	Target Sensitivity
	0.5	0	Minimum Length (um)	Later Com 4 4 JA 2018	GOs required to reach target sensitivity
-	non	e	Minimum Width (um)	11	Maximum # of GOs
				50	Maximum # of Structure
	F-fact	or C	alculation:	11	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

COMMENTS

 EPA SAMPLE ID:
 BA-00065
 Sample

 LAB SAMPLE ID:
 270801086-0012
 Count

Sample Type Air
Count Rule 10312

Prep Direct
QA Type Not QA

ERROR CHECK
OK - No errors found

 Data Entry by:
 L. Ramowski
 QA by:
 K. Lusher

 Data Entry date:
 11/12/2008
 QA date:
 11/28/2008

Data Ent			11/12/200				QA date:	11/28/20	800]				
Maximu			gs Reache	d-Complet	e current (GO then s	top.	1								
Grid	Grid	Structure		tructures	Dimens		ons (a) Identification		Mineral Class (b)			1 = yes, blank = no			Fract. GO	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С		Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND	t flanc	9127 A 100 T	may reco	73 W 30	100000000000000000000000000000000000000	Water St.	***		T WEST		3077.273		75.35	Market St.
1	J4	ND					A Comment of			125,176				and the second		100000
1.	J6	ND	41, 553			60 J. J. P.		Act of the	g (100)		100		4.5	1.5	100	Orași e
1	J8	ND	1 3 36.7	4 75 1445	Store Proper	(400 A C 100		r seess	But of the	110	31.0	of the state of th		4.546.05		
1	J10	ND		and the second		E reservation		State 2	1000		1990		813		ret a	
1	-11	ND				\$ 15 A. S.			10.24		1000		200		, Le server	******
1	13	ND	1000	7.4	fig. 20 Jan.	1 1000	1000 100 70		14.5% (A)	7 341	740.00		100	37.44	***	
1	15	ND			Track in	4.		197					100	1.61		
1	17	ND		1000	Ball to a	1000000		200		12.52	100		7.43	200		
1	19	ND		37.00		0.65047073		September 1997		10年費				Section .		All the second
1	H2	ND					100				196	Programme Committee Commit				
1	H4	ND	3 4 3 9 3		T No.	garatty Mar	Service and services	4000	10 M 100 P	4.00	5,60		Service 2			
1	H6	ND	100	10 a 50			15-16-16-16-16-16-16-16-16-16-16-16-16-16-	Street in	多种的		100		10.00			* AR
1	H8	ND						38 T 21								
1	H10	ND		THE CO.		3/4/04/2018	68.050 s = 200 <u>1</u> 0.			1000	3.254.9	Paragasta	ratio Section	13223		
1	G1	ND						Maria de la composición dela composición de la composición dela composición de la co	4400		al pill	Comment Commen	14.8	1,000,000	all Attack of the	
1	G3	ND	E. F. E. E					A Section 1				The state of the s				
1	G5	ND	100	SALTER OF	Marian Car	and the same	18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18 S. 18	ACCURAGE.	1.90		cestogradu	Controlled to the second				
1	G7	ND	T. Carlot			\$61 1 XXX	A Bar Tells	00275	19 () () ()		tice of the con-		Produce.	CONTRACTOR	東海門 新	
1	G9	ND									e de de de			100 A	27 W.27	## X X
1	F2	ND	2.58.50		20 ²			a de la composición dela composición de la composición dela composición de la composición de la composición dela composición dela composición de la composic								
1	F4	ND	Section 1	1000	Arteston o	3241 (2.46)				A 18			operation a literature	7.70		
1	F6	ND	100	al Calling Control	MARCH STREET	HAVE MEETING		B. 14.	9500	3.48	Section (Contract)				1000	
1	F8	ND		31.7		200	e dina di s			A Carlo Lot	366n 70	A STATE OF THE STA	Property of the State of the St	100		
1	F10	ND		CONTRACTOR		10 SEC. 10	, april 1990			14.2	1 1 1 1 1					
2	J1	ND		100			51/14/14/14	200	Paris Description	4.43	30.00	The Later Continues of	5 7 6	3745		a de la companya de l
2	J3	ND						ALC: N	34560.55	1000						
2	J5	ND	11000	24.0	See to the									1500	MACCON ST	48.5
2	J7	ND	1		A State of the sta	The state of the s	100000000000000000000000000000000000000	6 (1975)	2005		1000			100	CONTRACTOR	PARKE.
2	J9	ND	1200				or Calculation birth	1000			The state of			7000		
2	G1	ND			2000 CO			PCDD 2-8	450 30		1000			State of the	Philippine a	
2	G3	ND						and the second	WEST OF	756200	100		Established	1000		
2	G5	ND			## 725a							7.7 F. F. F. F. F. F. F. F. F. F. F. F. F.	S455F4	G-60-7-1		
2	G7	ND	10.00								270	And the second section of the section of the section o	1.430	3144		
2	G9	ND		# 75 Kings	G# 95	44.430				100		The state of the s				数量等等

2	F2	ND	
2	F4	ND	
2	F6	ND	
2	F8	ND	

BA-00066_270801086-0013_ISO_11-05-Versio

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Indirect factor

Effective filter area

Status Analyzed EPA Sample Number BA-00066 Not QA

385.0 mm2 1.00E+00

QA Type

Number of Grid Openings (amphibole)

Lab Sample Number

39 Number of Grid Openings (chrysotile) 39

Sample Type

270801086-0013 Grid opening area

0.0130 mm2

Field Category Prep Direct Volume (L) or Area (cm2)

1170 L

Counting Rules 10312 Sensitivity (amphibole) Sensitivity (chrysotile)

6.49E-04 s/cc 6.49E-04 s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Air

Stop	ping
Rul	ac.

Target S	Max GOs	Max N
0.0024	11	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check Grand total

OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<≃.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00066 270801086-0013 ISO 11-05-08 D.xls

FILE NAME: BA-00066 270801086-0013 ISO 11-05-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27		
Instrument	JEOL 100 CX (30)		
	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L =	1,000		
Scale: 1D =	1,000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed 🔻		

EPA Sample Number:	BA-000)66
Sample Type	Air	_
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1170)
Date received by lab	10/20/2	800
Lab Job Number:	270801	086
Lab Sample Number:	270801086	5-0013
Number of grids prepared	5	
Prepared by	K. Barr	nes
Preparation date	10/20/2	800
EPA COC Number	L1465	51

Analyzed by	R. Pescador		
Analysis date	11/5/2008		
Prep	Direct	•	
it sample type – air, is there loose material or debris in the cowl?	No	~	
Counting rules	ISO (Air or Dust)	•	
Grid storage location	2708-EMR-96, I		
Archive filter(s) storage location	Westmont		
Barillaring and the constraint of the constraint	e-ingladisin	.	
F- factor			
QA Type	Not QA	•	

Recording Rules:

Stopping Rules:

						
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity	
0.50		0	Minimum Length (um)		GOs required to reach target sensitivity	
	none		Minimum Width (um)	11	Maximum # of GOs	
				50	Maximum # of Structure	
	(_		11	Estimated # of GOs	

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

٧

COMMENTS

 EPA SAMPLE ID:
 BA-00066
 Sample Type Count Rule
 Air Out On the Prep Direct
 Prep Direct
 OK - No errors found

 LAB SAMPLE ID:
 270801086-0013
 Count Rule
 10312
 QA Type Not QA
 OK - No errors found

 Data Entry by:
 L. Ramowski
 QA by:
 K. Lusher

 Data Entry date:
 11/12/2008
 QA date:
 11/28/2008

Grid	m # of Gri Grid	Structure			Dimens		Identification	Mineral Class (b)						s, blank :		Fract. GO
Giiu	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	[1	ND		《 》、"然"的	1 X 2 X	Months	47	57.40.60	多维加	124	补抗 剂		Section 2		100	
1	13	ND	27 A A A	(Exc. Sec.			1000	X145.44		1000		Professional Control	20.55			
1	15	ND				4. *** 10. ***	*******	图象和	7554	Sec. 1	130			4.00		
1	17	ND	1000	40,000	436			然物态	600 (2)	The state of	1		1			
1	19	ND	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	29-33-73					数字字	100		Paramatan September 1	acide Bratis II.	24	P (C)	
1	G1	ND						15.0	2	28 25	1.00					
1	G3	ND	* * *	100		的情况		2.8	FULL.	100	27.5	1.059.59	1 0000			14 Sec. 16
1	G5	ND		12.44	38 W. Free				12 M	10 P. ST.	1		124			Open a si
1	G7	ND	7 27 B		34.75	4.46		37.6			1.46%	Programme of the second	15000	10.000	X	
1	G9	ND	74.95	Share a	(pro-1)			9949	24 7	1.0		Section 188	r same s	14.45	19 P. W.	85-27-
1	F2	ND			20 MAR 1		To the Park	14.7	diam.	19.74			12,000			41.5
1	F4	ND	100	77.22	15 22	120 m		1000			25.3		3-48-52-5			
11	F6	ND	不是我	149% TE 1575	4 2 - 2 -		1956	\$19.00 G	100	12.22	417.544				15000	表别的
1	F8	ND		Sec.	4.2		100	10.00	10 500	33.5	40474		G 10 30.00	4-126		100
11	F10	ND		right to it.		49 19178	2956	30.00	12.0		18.00		3.00			19-X H 197
1	E1	ND	1 THE	13.12.00	200		. 1-270041	100			1,2	er year of the second	77.67		Sept 1	146177
1	E3	ND		1000			100	46.4	17.	ALTERS N	1000	Charles the Control of	3544003	14.4	4 (* 1 00 (*)	**************************************
1	E5	ND	1.75	144	de position	X - 1 - 1	15 35 35 15	100	Sec.	32.3	113.00			1000		2. 2. 1124
1	E7	ND	10 St. 7 Mg		415		100		66,000	15 44 42	724 1948	3.84 A. S. S. S. S. S. S. S. S. S. S. S. S. S.	4-12 1-1515	177.74	1740	400
1	E9	ND	* * *	A 100 TEL			107	1000		11.74	1.734			1.45		
1	D2	ND	0.12		14			A 1 4 4 5 1	***		16.53			100	49.134	
1	D4	ND		15,0475-170			7.00	7.74		Comme	7.19	and a strong strong street	14.5	100	4.835	
1	D6	ND		27.50	¥,25,5		186	343, 244	ix sec.	7,63	1.55				$G_{i}(x)$	
1	D8	ND		1984 Page 1	40.22		1000		被 为一次	71.00	45 Y 54					24.4
1	D10	ND	100	24 of \$4	100		1978	14 22	all to the	4743	35.25	\$2000 (ALC) \$24	100			
2	J2	ND	1000	2000				X-14-2	16.77			40% 40% 70% 70%			(() (e.2)	No.
2	J4	ND			基金工作		27.78E(1)	HARMES	1000	2854	300	444 74 July 100 100 100 100 100 100 100 100 100 10				
2	J 6	ND	100	10000	Park 1	The state		100		200			14.572	75,072	Topics :	
2	J8	ND	100	47.4	45		75 75 75 75	\$5.00	E. 1	1457	177	14.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.				
2	J10	ND	1.	100	(Martin)	444	19 30	11.7	Y Kentral	2.44	arre/V	PAGE AND AND AND AND AND AND AND AND AND AND			100	
2	[1	ND	1007	-11.54	100	11.12.04.2	4.4	And the	#61.5F	76-44257			April 1	55.65		14.1
2	13	ND	***			24 3	24.29542	3 000 000		-9137	996.0	are productive in	100			Mark Eng
2	15	ND	1116			100	70.00	7/01/			- A - S	AND THE PROPERTY OF	3.7	1,770	144.46	1.5
2	17	ND	1,25			Distance in	100	***	200	30.00	140.73	and the second second	446		3 6324	
2	19.	ND	s - maidat	4	Tare of the last	数据证明	7 76.400.00		4380.0	* * W 7 12	1400	errogen of the contract	100		754(T)	

2	H2	ND	
2	H4	ND	
2	H6	ND	
2	H8	ND	



SAMPLE ID

Status

QA Type

Category

Prep

Analyzed **EPA Sample Number** BA-00067 Not QA

Lab Sample Number Sample Type

Air Field Direct

10312

PARAMETERS

Effective filter area Indirect factor

385.0 mm2 1.00E+00

Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile)

39 39

Grid opening area

0.0130 mm2

Volume (L) or Area (cm2) Sensitivity (amphibole)

1178 L 6.45E-04 s/cc

Sensitivity (chrysotile)

6.45E-04 s/cc

Recording Rules:

Counting Rules

Min. AR Min length (um) Min width (um) ≥ 3:1 0.5 none

270801086-0014

Stopping Rules:

Max GOs Target S Max N 0.0024 11 50

COUNTS (based on countable structures only)

Bin	LA	OA	C	PCME(all)	PCME(asb)
a	0	0	0		
b	0	0	О		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check Grand total OK 0

OK OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	C		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00067 270801086-0014 ISO 11-05-08 D.xls

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL	27	
Instrument	JEOL 100 CX (30)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.013	0	
Scale: 1L =	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field	•	
Filter Status	Analyzed	•	

EPA Sample Number:	BA-00067		
Sample Type	Air	-	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1178	3	
Date received by lab	10/20/2	800	
Lab Job Number:	270801	086	
Lab Sample Number:	27080108	6-0014	
Number of grids prepared	5		
Prepared by	K. Barı	nes	
Preparation date	10/20/2	800	
EPA COC Number	L146	51	

Analyzed by	R. Pescador			
Analysis date	11/5/2008			
Prep	Direct	•		
ir sample type – air, is there loose material or debris in the cowl?	No	~		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96,	J		
Archive filter(s) storage location	Westmont			
ii) di 1900 en 2007 en 1900 en 1900 en 1900. Pen l'agent i de company en 1900 en 1900 en 1900 en 1900 en 1900 en 1900 en 1900 en 1900 en 1900 en 1900 en 1				
F- factor				
QA Type	Not QA	~		

Recording Rules:

Stopping Rules:

	11000	*****	111111111111111111111111111111111111111		
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
0.50		0	Minimum Length (um)	<i>∃</i> 111 ੈ	GOs required to reach target sensitivity
none		е	Minimum Width (um)	11	Maximum # of GOs
				50	Maximum # of Structure
	E fact	م. <i>د</i>	alaulation.	11	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

V

COMMENTS

EPA SAMPLE ID: BA-00067 LAB SAMPLE ID: 270801086-0014

Sample Type Air Count Rule 10312

QA by:

QA date:

Prep Direct QA Type Not QA

ERROR CHECK OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 11/12/2008

K. Lusher 11/28/2008

Maximu		d Opening	gs Reache	d-Complet	e current (30 then s	top.						,			
Grid	Grid	Structure	No. of S	Structures	Dimens	Dimensions (a) Identification Mineral Class (b)				1 = yes, blank			Fract. GO			
Gild	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Comments		Photo I	EDS	Chrys.
1	H1	ND	14.5	\$42 E 10	7. A. W. ***		47 136	200	设施服务	***	1992	4.67.47740 TV TV TV	** #**9## 14	6 150 31	1.74	
1	H3	ND					3.5 m				10.74		24000			
11	H5	ND	1000		100		1326 TH	40.00		415 (01.39) (4.5)	100	Marie Company	4.00			
1	H7	ND	11.14.	- P. W.	Part In Sec.	4500	A Ball of the	A (2)			42374			3.00	1000	
1	H9	ND		5260 A	100		7.7	de Sit (Liv	A CONTRACT	30	15.76		11.71.2			
11	G2	ND	All the state of t	17,000,000,000	10 (10 km²)	1.00			541	7 100			1.0		2.00	
11	G4	ND		4.6.544				25.25 m		1000			12000	6 - S		
1	G6	ND	2-25	- 18 W	# 3.75°	4.0		Carrier to	100		30 Mg		* 7. Lui			
1	G8	ND		and the	6.5	1000			1989	7.0369	3.725					
1	G10	ND		10.76	10.0	2.44	# \$7 \$4 a \$4 \$6 \$4	74. A	1.5	14033						
1	F1	ND			2 to 1 to 1				44.00		0.00					
1	F3	ND	1.0	Charles 4	1 (A			EMES !	是第13萬		100				Assault 2	#12
11	F5	ND	4 (128)	100			(A)	****	4.44C		7.0			25.3		
1	F7	ND	26.	NACCO C	(A.	1000	243,75, 865, 371	40.5		100						
1	F9	ND				2004	March 1967	100		30 200	(C. C.		32 32	9717	- 15 T	
1	E2	ND			63.54		2004/04/25									
1	E4	ND		175 July 1997			Marie 1	300	100		(Table)	A second			10.70	
1	E6	ND	265		26.40	4.00	144 F	M. Carlo	100000000000000000000000000000000000000		1.5					A 100 A
1	E8	ND				# - 7 - 2	300 300 310			290	100.00					The second
1	E10	ND		444				State -	In the second	100	STATUTE OF					And the second
1	D1	ND	7.00	1000	3			100	2000	100						AMERICA STATE
1	D3	ND					100.00		Control of the	3000			100			
1	D5	ND ND		345 345				200	100		0.00			1000		
1	D7 D9	ND ND				200	The Control	200	1 (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		100000000					
2	11	ND	44.0		100000000000000000000000000000000000000				2 - 2 C - 2	11.54	and the second				13.75.C	
2	I3	ND	2.00	0.400.00			400		124,300						200	
2	15	ND		100					27100	7 (15 m)	1		Part and an		e contra	
2	13 17	ND							2000	27.00	1000		10.5		CALL TO SERVICE	***
2	19	ND	ar de	in the second		4654			4 4						644	2,450,450
2	H2	ND				2.544(8)		A. Section	La PE	25.12.0	100000				e de la compa	
2	H4	ND		100				24/25	3121					a disa		
2	H6	ND			100				104.0	10000	and the same					
2	H8	ND					7	1000			1987	14 Table 1			244	
2	H10	ND	100713		H-141		Mark Street	A SHOP AT A	6016	1913	303 443	10-99 × 12			200	
	1110	110	A CHARLES BY EN		All All Andrews St. Sec. St. Committee	SALE TO SALES	A contraction of the same of	**************************************	Takkes audiograp	- Telepholiphic	(werden der State ()		CONTRACTOR STATEMENT CONTRACTOR C	200000000000000000000000000000000000000	100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 TO 100 T	

2	G1	ND	
2	G3	ND	
2	G5	ND	
2	G7	ND	

Version

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

QA Type

Prep

Analyzed BA-00068

Not QA 270801086-0015

Lab Sample Number Sample Type Category

EPA Sample Number

Air Field Direct 10312 **PARAMETERS**

Effective filter area 385.0 mm2 Indirect factor 1.00E+00 Number of Grid Openings (amphibole) 39 Number of Grid Openings (chrysotile) 39 0.0130 mm2 Grid opening area

Volume (L) or Area (cm2) 1178 L Sensitivity (amphibole) 6.45E-04 s/cc Sensitivity (chrysotile) 6.45E-04 s/cc

Recording Rules:

Counting Rules

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

Stopping Rules:

Target S	Max GOs	Max N
0.0024	11	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
þ	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0
Check	OK	OK	OK		

Check OK OK Grand total 0 OK

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00068_270801086-0015_ISO_11-05-08_D.xls

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

Laboratory name:	EMSL27			
Instrument	JEOL 100 CX (30)			
Voltage (KV)	100 kV			
Magnification	19,000 X			
Grid opening area (mm2)	0.0130			
Scale: 1L =	1.000			
Scale: 1D =	1.000			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	360.0			
Category	Field			
Filter Status	Analyzed			

COMMENTS

EPA Sample Number:	BA-00068		
Sample Type	Air	•	
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1178	3	
Date received by lab	10/20/2	800	
Lab Job Number:	270801	086	
Lab Sample Number:	270801086	3-0015	
Number of grids prepared	5		
Prepared by	K. Barr	nes	
Preparation date	10/20/2	800	
EPA COC Number	L1465	51	

Analyzed by	R. Pescador			
Analysis date	11/5/2008			
Prep	Direct	•		
ii sample type = air, is there loose material or debris in the	No	•		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, K			
Archive filter(s) storage location	Westmon	t		
Talkada errordore e alla a da cala. Colò del cara a colo colo cala	o is a significa			
F- factor	1			
QA Type	Not QA	•		
	Not QA			

Recording Rules:

Stopping Rules:

Neco	uiiic	(Kules.	Stopping r	tules.
≥ 3:1	•	Minimum Aspect Ratio	0.002	Target Sensitivity
0.5	0	Minimum Length (um)	10 State 10 at 10	GOs required to reach target sensitivity
поп	те	Minimum Width (um)	11	Maximum # of GOs
			50	Maximum # of Structure
C 64		alassiatia	11.	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction: V

ERROR CHECK BA-00068 Sample Type Air Prep Direct EPA SAMPLE ID: Count Rule QA Type Not QA LAB SAMPLE ID: 270801086-0015 10312 OK - No errors found

QA by: K. Lusher L. Ramowski Data Entry by: Data Entry date: 11/12/2008 QA

Maximum # of Grid Openings Reached-Complete current GO then stop. QA date: 11/28/2008

Grid	Grid	Structure		d-Complete Structures	Dimens		Identification		Mineral C	lass (b)			1 = ye	s, blank		Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	luentineation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1.	J2	ND	22 to 10	223384	35.75, Z.	1,217,015,217	4.3		1000		70 m	Service Control of the Control	14/00	1216		
1	J4	ND					Charles 1	44.57	2000	200	Lie e	4.5		Avet		
11	J6	ND	100	77,300			15	Wit.	与中国的		100000	(1) - (1) -	7.7			4
1	J8	ND	1247-01-01-0	Potential Co.	表表 1915		491	1000	4.70	建鄉	100		ar Salitan		(9.25)	
11	J10	ND	200				25.50		44.29		2,375	MINE TOWN		360		-9.7
1	H2	ND		A STATE OF				Market	X2500		7.273	Selfer Control		15.0		
1	H4	ND		2012			rich in the second		20.00	9132			1000	100		
11	H6	ND	or the second	THE PROPERTY			197		16 y 16 i		100			40.00	New Year	
1	H8	ND		10071		14.00	Transport		400	7.640			10000	212	4	
1	H10	ND	4441	35 M			Marin Salah	*		- ec 17.	366	Artist (Ag	164.45	16.72	0.00	
1	G1	ND	32 31 2 3	Maria de Ale	11.0年於		1. 11 E 11-	4 5 2	9.694	100	1927	April 1997		98.20	480 A.	10.0
11	G3	ND	***	STATE OF STREET		1000	STEEL STEEL ST			10,533	40.00					100
11	G5	ND		建新的			Tagle Market	97.3		11 K 74 P	1967		2.00	454		
11	G7	ND	34.34.94	*					1967	4440	47.5	Section 4.	-8:74794	144	4700	
1	G9	ND	- 10, 7,25,2			************	op/\$584525-9	45.5		345016	0.656	#637754 19234 - 1535		49.4		700,000
1	F2	ND		4 34 , %	4.0		Carlot Carlot	(N. 14)	1000000	William St.	444	2011				
11	F4	ND	110	4.5				1. Feb. 1.	100	7 ()	100	to the state of th				
1	F6	ND	4.2	Alexander -	2 000 大学		150 220	Mar 37	1.77	11×10	1908.80			5.5	323	
1	F8	ND	56 SET 34	46.0	建筑 2440	4-9-6-6	ety disease.	September 1	1000	2.25	11,661,044			100		
1	F10	ND	35,740,4	14 m		15.00	746	4	14 (4)	100	Profile.	Brown Til	15,5 27.7	100		Sec. 25.
11	E1	ND	2 Spec (2.75)	SECULIAR SECTION	P. 6575		William Co.	4.	V 400 000	75,339	(1) (F) (F)	F1408446		1, 166 3	tigete.	
1	E3	ND	14 3 6 5 8	7/ (#A)-()				43.5			30,75					
1	E5	ND		76 W 1		* V # #	Market St.		1.1		222					
1	E7	ND						10.	100	11000	18.20		15.00		#/	
1	E9	ND	79 (T) (#4)	Service :		19 546	Contract of	April 1941	1.500	北海湖	2015	Section 1				
2	J2	ND			Sec. 4	7-7929			(- Page	100	\$ (# 4)	PER CONTROL OF THE CO		3.0		
2	J4	ND	1921	33	X 11.587	145 BA	ne element	Salak .	10.00		0.00	With the second	14 TO 4			
2	J6	ND	A SACTOR AND	and the second	20 MARS	10.9		(1) (1) (1)	2,67,070		32.0		70	4000	ersi yeri	
2	J8	ND		200	7	190		Miles	1000		1,100		100		771157	100
2	J10	ND	THE STREET	Sekulta:	201.25	100	AND CONTRACTOR	221501	X	7.2.1	3550			60.00		
2	[1	ND			Service Services		77 Tare 16 1, 25 13 1		10000	4Stake	34,500	\$266 DECEMBER 1992	1000		ok, ic	
2	13	ND	7,44,7670	200 C 500 +14755	1000	Mark Street	76845	3975								
2	15	ND	1-14/01/20	Part Co	a service of	100		A 20 7	7.77	100	5 750.27	25 C S C S C S C S C S C S C S C S C S C		37.5	Mark (
2	17	ND	4.14		\$165.75 B	7.00			33348	A MARK	7702.69		1000	37.44		
2	19	ND	AYYAR HAL	2 (2 d) 1 (2 d)		1. 11.11	artes (iii)			100000	Jan 5			1007		31 (0) (1)

	2	H2	ND	
Γ	2	H4	ND	
	2	H6	ND	
Γ	2	H8	ND	

,

385.0 mm2

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

PARAMETERS

Status Analyzed **EPA Sample Number** LB

Effective filter area Indirect factor

1.00E+00 Number of Grid Openings (amphibole) 10

QA Type Lab Sample Number

Number of Grid Openings (chrysotile) 10

Sample Type Air Blank Category

0.0130 mm2 Grid opening area Volume (L) or Area (cm2) 0 L

Direct Prep 10312 Counting Rules

Sensitivity (amphibole) Blank s/cc Sensitivity (chrysotile) Blank s/cc

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	none

270801086

Stopping Rules:

Target S	Max GOs	Max N
	10	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

OK

OK Check OK OK Grand total 0

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а					
b					
С					
d				5	
е					
f					
Total					<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: 270801086_ISO_11-05-08_DLB.xls

FILE TYPE. Original

Recording Rules:

Stopping Rules:

≥ 3:1	•	Minimum Aspect Ratio		Target Sensitivity
0.5	0 ,	Minimum Length (um)	10	GOs required to rea target sensitivity
nor	ne	Minimum Width (um)	10	Maximum # of GOs
			50	Maximum # of Struc

))	10	Target Sensitivity GOs required to reach target sensitivity
	10	Maximum # of GOs
	50	Maximum # of Structure
	10	Estimated # of GOs

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

TEM Asbestos Structure Count

BNSF 2008 Libby Site Investigation v32h

Laboratory name:	EMSL27				
Instrument	JEOL 100 CX (30)				
Voltage (KV)	100 kV				
Magnification	19,000 X				
Grid opening area (mm2)	0.0130				
Scale: 1L =	1.000				
Scale: 1D =	1.000				
Primary filter area (mm2)	385.0				
Secondary Filter Area (mm2)	360.0				
Category Blank					
Filter Status	Analyzed				

EPA Sample Number:		
Sample Type	Air	•
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)		
Date received by lab		
Lab Job Number:	270801	086
Lab Sample Number:	270801	086
Number of grids prepared	3	
Prepared by	K. Barr	nes
Preparation date	10/20/2	800
EPA COC Number	L1465	51

Analyzed by	R. Pescador			
Analysis date	11/5/2008	3		
Prep	Direct	•		
loose material or debris in the	No 🔻			
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-96, L			
Archive filter(s) storage location	Westmon	it		
Andreas en la la la la la la la la la la la la la	Willia Ego k			
F- factor	100			
QA Type	Lab Bíank	•		

COMMENTS

 EPA SAMPLE ID:
 0
 Sample Type Air.
 Prep Direct
 Direct
 OK - No errors found

 LAB SAMPLE ID:
 270801086
 Count Rule
 10312
 QA Type LB
 OK - No errors found

 Data Entry by:
 L. Ramowski
 QA by:
 K. Lusher

 Data Entry date:
 11/12/2008
 QA date:
 11/28/2008

Maximum # of Grid Openings Reached-Complete current GO then stop.

Grid	Grid Structure		No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)			1 = ye	s, blank :	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	identineation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	F1	ND			***	400 (400) (400)		1	742.5) And 4	1400	STATE OF THE STATE	in the	22.20	15-144	Part of the c
1	F3	ND	1. 1. 1. 1.				37466 3529		2.2		100	e distanti desiri	. 133	8.0	49.46	
1	F5	ND			2 to 10 to			型位置			178.85					31. FE. C.
1	F7	ND			345 Y 7		74 W 1	62.42	****	V.	1000	AND THE PERSON IN			1100	10 m
1	F9	ND					7. 197.19		**		200	7 T C T C T C T C T C T C T C T C T C T			198	
2	E1	ND			10.6		100			Mr. Ba		"ACTABLE"	1.5	17.72		Strain E
2	E3	ND					10000		4500	1999	* 115 m	The second second				State Service
2	E5	ND		Carrier Table	Mary 1		100		2000年底				255	4	6 2764	1
2	E7	ND					100				499	F-171-2012-01				
2	E9	ND		100			77.7	Marin Control	Section 15	A	1.			14		

Vers

385.0 mm2

10

10

BNSF 2008 Libby Site Investigation v32h TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status

Analyzed BA-00068

QA Type RS 270801086-0015

Lab Sample Number

EPA Sample Number

Sample Type Air Category Field Prep Direct Counting Rules 10312 **PARAMETERS**

Effective filter area

Indirect factor 1.00E+00 Number of Grid Openings (amphibole)

Number of Grid Openings (chrysotile)

Grid opening area 0.0130 mm2 Volume (L) or Area (cm2) 1178 L Sensitivity (amphibole) 2.51E-03 s/cc Sensitivity (chrysotile) 2.51E-03 s/cc

Recording Rules:

Min length (um) Min. AR Min width (um) ≥ 3:1 0.5 none

Stopping Rules:

Max GOs Target S Max N 0.0024 11 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0		
d	0	0	0		
е	0	0	О		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK OK Grand total

CONCENTRATION (s/cc)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio	
LA = Libby-type amphibole	a			<5	
OA = Other amphibole	b	<.5		>= 5	
C = Chrysotile	С		>.5	>= 5	
	d	>=.5 to < 5	<=.5	>= 5	
ı	е	5 to 10	<=.5	>= 5	
	f	>10	<=.5	>= 5	

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

BA-00068 270801086-0015 ISO 12-01-08 DRS.xls

12/3/2008, 3:31 PM

FILE NAME: BA-00068_270801086-0015_ISO_12-01-08_DRS.xls

FILE TYPE: Original

Recording Rules:

Stopping Rules:

TKOODIGING TRAIGOT		otopping :	tutes.		
	≥ 3:1	•	Minimum Aspect Ratio	0.0024	Target Sensitivity
	0.5	0	Minimum Length (um)	1.41	GOs required to reach target sensitivity
	nor	ie	Minimum Width (um)	11	Maximum # of GOs
				50	Maximum # of Structure
	F-factor Calculation:		11	Estimated # of GOs	

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

.V

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count

	1		
Laboratory name:	EMSL27		
Instrument	JEOL 100 CX II (27-2)		
Voltage (KV)	100 kV		
Magnification	19,000 X		
Grid opening area (mm2)	0.0130		
Scale: 1L=	1.000		
Scale: 1D =	1.000		
Primary filter area (mm2)	385.0		
Secondary Filter Area (mm2)	360.0		
Category	Field 🔻		
Filter Status	Analyzed		

EPA Sample Number:	BA-00068			
Sample Type	Air	•		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1178	}		
Date received by lab	10/20/2008			
Lab Job Number:	270801086			
Lab Sample Number:	Sample Number: 270801086-0			
Number of grids prepared 5				
Prepared by	K. Barnes			
Preparation date 10/20/20				
EPA COC Number	L14651			

Analyzed by	R. Pescador			
Analysis date	12/1/2008	3		
Prep	Direct	•		
ir sample type – air, is there loose material or debris in the cowl?	No	_		
Counting rules	ISO (Air or Dust)	•		
Grid storage location	2708-EMR-9	6, K		
Archive filter(s) storage location	Westmon	ıt .		
ting to the factor of the selfer	to 1865 (46)	V.,		
F- factor	1			
QA Type	Recount Same	•		

COMMENTS

BA-00068_270801086-0015_ISO_12-01-08_DRS.xls

EPA SAMPLE ID: LAB SAMPLE ID:

BA-00068 270801086-0015 Sample Type Air Count Rule 10312 Prep Direct
QA Type RS

ERROR CHECK

OK - No errors found

Data Entry by: Data Entry date: L. Ramowski 12/2/2008 QA by: K. Lusher QA date: 12/3/2008

Grid	Grid	Structure	No. of S	No. of Structures		Dimensions (a) Identification			Mineral C	lass (b)			1 = ye	s, blank	= no	Fract. GO
Gild	Opening	Туре	Primary	Total	Length	Width	luchtilication	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	J2	ND		*	1000	3 (23) 77				300	学教育	Continued and the second	2.4	2.323	1 CALL	\$1.2785E
1	J4	ND			80 Per 45	24.44.16			Bre 3	7. 4	7.4	Control of the Control			Sec.	经基础
1	J6	ND	100 A 100 A	1.14.14.17	4.50	建	1000		W250	*		To the second restriction	100	1	100	1. 18 18 18
1	J8	ND	100		1.00	建筑中 。	5. 1	MACH!	200 B	400	7. S	1.00	With.	411	170.0	6,400 - 6,4
1	J10	ND	100 m			360	A. 15 . 15 . 34	346 /32	17.6	Mar.			11.	24.5	Later Control	100
2	J2	ND		40 - 10 - 1 0	4.4	3.04	100		25 , 30, 40	第 卷分	\$ 300		Angle of the	Sept.	14-14-2 A	
2	J4	ND	3555 \$4	1000	1.00	4.8	***	34	100	20,943	24.0				100	
2	J6	ND			recal con	Mark .	100 100 2	200	1967	#1.7 P	3405-7		60, 76	1		22000
2	J8	ND	100	1000	46.0	30 0	100		200	37.75	12,013	and the second second			773 E 20	350 A TE
2	J10	ND		200		40	100		4500		(Figure)		\$1-63A			70.5

Vers

SAMPLE ID

Status Analyzed BA-00067 **EPA Sample Number** RP

BNSF 2008 Libby Site Investigation v32h

TEM Asbestos Structure Count -- ISO 10312

QA Type

Lab Sample Number Sample Type

Air Field Category Direct Prep Counting Rules 10312 **PARAMETERS**

Effective filter area 385.0 mm2 1.00E+00 Indirect factor Number of Grid Openings (amphibole) 11 Number of Grid Openings (chrysotile) 11

0.0130 mm2 Grid opening area Volume (L) or Area (cm2) 1178 L

Sensitivity (amphibole) 2.29E-03 s/cc 2.29E-03 s/cc Sensitivity (chrysotile)

Recording Rules:

Min. AR Min length (um) Min width (um) ≥ 3:1 0.5 none

270801086-0014

Stopping Rules:

Target S Max GOs Max N 0.0024 50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	0	0	0		
b	0	0	0		
С	0	0	0	į	
d	0	0	0		
е	0	0	0		
f	0	0	0		
Total	0	0	0	0	0

Check OK OK OK Grand total 0 OK

CONCENTRATION (s/cc)

	,				
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
е	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td><dl< td=""></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""></dl<></td></dl<>	<dl< td=""></dl<>

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

FILE NAME: BA-00067_270801086-0014_ISO_12-01-08_DRP.xls

360.0

Field

Analyzed

FILE TYPE: Original

BNSF 2008 Libby Site Investigation v32h **TEM Asbestos Structure Count**

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100 kV
Magnification	19,000 X
Grid opening area (mm2)	0.0130
Scale: 1L =	1,000
Scale: 1D =	1.000
Primary filter area (mm2)	385.0

EPA Sample Number:	BA-00067		
Sample Type	Air 🔻		
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	1178		
Date received by lab	10/20/2008		
Lab Job Number:	270801086		
Lab Sample Number:	270801086-0014		
Number of grids prepared	5		
Prepared by	E.Wyatt- Pescador		
Preparation date	10/20/2008		
EPA COC Number	L14651		

	·		
Analyzed by	R. Pescador		
Analysis date	12/1/2008		
Prep	Direct 🔻		
ir sample type – air, is there loose material or debris in the cowl?	No 🔻		
Counting rules	ISO (Air or Dust)		
Grid storage location	2708-EMR-108, A		
Archive filter(s) storage location	Westmont		
in a conservation de la conserva	s transports		
F- factor	1		
QA Type	Repreparation		
	4		

COMMENTS

Category

Filter Status

Secondary Filter Area (mm2)

Recording Rules:

≥ 3:1

Stopping Rules:

11 Estimated # of GOs

	411110	Traico.	Otopping i	cuico.
3:1	~	Minimum Aspect Ratio	U. UUL .	Target Sensitivity
0.5	0	Minimum Length (um)		GOs required to reach target sensitivity
none		Minimum Width (um)		Maximum # of GOs
			50	Maximum # of Structure
			144. A 184. CAN	

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

ERROR CHECK Sample Type Air BA-00067 EPA SAMPLE ID: Prep Direct 270801086-0014 Count Rule 10312 QA Type RP LAB SAMPLE ID: OK - No errors found

K. Lusher Data Entry by: L. Ramowski QA by: 12/2/2008 12/3/2008 Data Entry date: QA date:

T	arget Se	ensitivit	tv Reached-Com	plete current GO.	then sto	D.

	tai det constitut a tenerica combinato de latitut etelebras carinara a seria.															
Grid	Grid	Structure	No. of Structures		Dimensions (a)		Identification	Identification Mineral Class (b)			1 = ye	s, blank	= no	Fract. GO		
Gild	Opening	Type	Primary	Total	Length	Width	Identinoation	LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
1	H5	ND	2.00	E PROPERTY	The second second	ing to	1747 1 2 2 2	20.00	CHT C	200	1600 B	The state of the s	177		300	新发展等
1	H7	ND	4.00				100			12 4425			12.68		1	
1	H9	ND	TAXCES.					新植石		34	100	The state of the s			270	4.61
1	C8	ND	100	2 - 1 P. 2			A 42.00.00 \$ 94		400	有品种	1000		ALC: W	Lance.		
1	C10	ND	100	***				1	3.5					を対象		7.34.4
1	B9	ND	100	17.97				Mark.	为 总约				7. 许多的			在 探查机会
2	11	ND	4-14-25		SP ₂ VIII t				27.5	77.67	Maria.		/ 100			数据的图片
2	13	ND	in orth					100	1/42	1000						
2	H2	ND	100	Applied to	200				135	200	*****		SAME	100		
2	G1	ND	200		it is a co	VA.C.44	Section 1			77.50	100		194.01		1000	
2	F2	ND	1000		14 To 16		Section 1		化學學的	计图	4.5	FIG. 2007 F. 17 17 17	- 1 P.O.			

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L=	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	38T 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

W

ND

W

ND

ND

W

NO

ND

NO

Grid Opening

J3

لل 17

Grid

No. of Structures

Total

Primary

EPA Sample Number:	BA-00044
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1915
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0001
Number of grids prepared	, 5
Prepared by	K. Bames
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

R. Pescador
11/4/08
D
No
ISO
2708-EMR-96, A
, Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

NAM

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:	
Minimum Aspect Ratio (circ	le one):
none £3:1	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

		ן ענ
Stopping Rules:	O :0004	13-13
Target Sensitivity:	್ ,ccc24 0.0001	
Max # of GOs:	39	
Target # of Structures:	50	1

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfail, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

С

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):
H Horizontal
Vertical

re pre	pped grids	acceptable for	analysis?	(circle one)
No a	valain.			



If No, explain:

LAB NAME EMSL27 270801086-0001 LAB SAMPLE NO.

EPA SAMPLE NO. SAMPLE TYPE

BA-00044 Α

QA TYPE Not QA

LAB JOB NUMBER 270801086 GRID STORAGE LOC. 2708-EMR-96, A

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class					1 = yes, blank = no			Fract. GO
			Primary	Total	Length	Width	100110110001011	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
ſ	HI	ND	•										,			
	H3	NO				*********									***************	
	45	NO	***************************************													
	H7	ND														
	H9	ND														
	G2	ND														
	GΨ	ND														
	G6	NO														ļ
	G8	ND														
	616	ND														
	FI	NO														
	F3	ND														
	FS	NO														
	P7	ND					_									
	F9	ND														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00044
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0001
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, A

	Grid	Structure	No. of Str	nicturae	Dime	nsions		Min			Mineral Class			1 = yes, blank = no				
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Sketch/Comments	Sketch		EDS	GO Chrys.		
2	. J2												f					
	IV																	
	.16																	
	.I8																	
	. IIO																	
	. 41								***************************************									
	. H3																	
	. H5																	
	. 47																	
	· H9	***************************************																
	. G2																	
	. GH																	
	. 66																	
4	. G8								·									
		PSP 114	W S															

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

ND

NO

ND

ND

NO

ND

NO

Grid Opening

13

717

117

10

#2

H4

146

HØ

H10

Grid

T	
EPA Sample Number:	BA-00045
Sample Type (A=Air, D=Dust, DF = Dustfail):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1915
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0002
Number of grids prepared	, 5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

R. Pescador
11/5/08
D
No
ISO
2708-EMR-96, B
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:						
Minimum Aspect Ratio (circle one):						
none	23:1	≥ 5:1				
Minimum Lengt	h (um):	0.5				
Minimum Width	(um):	None				
191011111111111111111111111111111111111						

Stopping Rules: Target Sensitivity:	6 ,0024 17 0,0001	47-U
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

No. of Structures

Total

Primary

C = Chrysotile

Mineral Class (see below)

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

V Vertical

Are prepped grids acceptable for analysis?	(circle one)	(
if No. explain:		



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00045
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0002
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, B

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class			1 = ye	Fract. GO		
Gild	Opening	Туре	Primary	Total	Length	Width	identinoation	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1 .	GI	ND			4					,	***************************************				• .	
	G3	NO														
	GUT	NP														
	G7	ND					,									
	G9	ND														
	FZ	NO														
	F4	NO														
	F&	ND														
	F8	NO							***							
	Flø	ND												;		
	٤١	ND											:			
	٤٤	ND														
	E 5	NP							222777							
	E7	NO											·			
1	E9	ND														

LAB NAME <u>EMSL27</u>

LAB SAMPLE NO. 270801086-0002

EPA SAMPLE NO. BA-00045
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER <u>270801086</u>

GRID STORAGE LOC. <u>2708-EMR-96, B</u>

	Grid	Structure	No. of Str		Dime	nsions		_	Mineral Class			1 - 11	es, blank	- 20	Fract.	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	Identinication		Sketch/Comments	Sketch		EDS	GO Chrys.		
2	IJ	ND	•				,									
	I 3	ND										1000				
	Is	NO														
	Ιγ	70														
	I9	N))														
	42	ND														
	fiy	ND														
	146	ND													L	
	+18	ND														
	410	NO														
	GI	NO						_				·				
	63	NO														
	GS	NO														
	G7															
	- Ju	NO VWstoy														

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	386
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

No. of Structures

Total

Primary

EPA Sample Number:	BA-00052
Sample Type (A=Air, D=Dust, DF = Dustfall):	А
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1626
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0004
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, C
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconcillation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right—>

Sketch/ Comments

NAM

Recording Rules:								
Minimum Aspe	ect Ratio (circle	e one):						
none	≥3:1	≥ 5:1						
Minimum Lenç	jth (um):	0.5						
Minimum Widt	h (um):	None						

	KL	
Stopping Rules:	جدا ادرن24 موروور	, c5°
Target Sensitivity:	0.0001	
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs
Fraction of primary filter used for indirect prep or ashing
[For dust and dustral, enter 1.0]
First resuspension volume or rinsate volume (ml.)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions Second resuspension volume (ml.) Volume applied to secondary filter (ml.) or used for serial dilution Third resuspension volume (ml.) Volume applied to secondary filter (ml.)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

	J	1	L	000		 	 		 	
t	GI	ND								
	G3	No								
	GS	ND			_		 			
	G7	No								
	G9	ND								
	P2	NO								
	FY	ND								
	F6	ND								
	F8	MD								
70	1	Nn								

LA

LA = Libby-type amphibole

Grid

Grid Opening

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Sketch

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:



LAB NAME <u>EMSL27</u>

LAB SAMPLE NO. 270801086-0004

EPA SAMPLE NO. BA-00052
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801086
GRID STORAGE LOC. 2708-EMR-96, C

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				-	1 = yes, blank ≈ no			Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	Identinoation	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	EI	ND		1,0,70								·				
	٤3	NP											- 100			
	E5-	ND														
	٤٦	No														
	E9	No														
	DZ	MO														
	04	NO														
	06	NP														
	08	ND														
	Dio	No														
	CI	NO														
	C3	ND														
	C5	Np														
	U	NO													*****	
	(0)	Nn														

LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. 270801086-0004

EPA SAMPLE NO. BA-00052
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801086
GRID STORAGE LOC. 2708-EMR-96, C

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
0110	Opening	Туре	Primary	Total	Length	Width	10071411544577	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	I (.	170							,							
	I3	No														
	IZ	NO									**********		,			
	I 7	MD													,	
	J9)	NP														
	GI	NO														
	63	NO														
,	GS	NO														
	G 7	ND														
	G9	ND														
	F2	ND														
	FY	NO														
	F6	NO														
1	F8	ND														
	P	440														

Laboratory name;	
Laboratory Haine.	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	8.0

Structure

Type

ND

NO

ND

M

ND

W

ND

MP

NO

Grid Opening

IZ

IB

18

mo

H3

45

Grid

No. of Structures

Total

Primary

EPA Sample Number:	BA-00053
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1619
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0005
Number of grids prepared	5
Prepared by	K. Bames
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	
	R. Pescador
Analysis date	11/5/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, D
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

NAM

Enter data in appropriate cells provided to the right---->

Sketch

Minimum Aspect Ratio (circle one):									
none	≥ 3:1	≥ 5:1							
Minimum Length	(um):	0.5							
Minimum Width	(um):	None							

	V/
Stopping Rules:	(2, 12, 08 C. 0034 -00004
Target Sensitivity:	-0.0004
Max # of GOs:	39
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for

Volume applied to secondary filter

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

C

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) Ro No If No, explain:



LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. 270801086-0005

EPA SAMPLE NO. BA-00053
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801086

GRID STORAGE LOC. 2708-EMR-96, D

Grid	Grid	id Structure No. of Structures Dimensions Identification		Identification	Mineral Class					1 = ye	Fract. GO					
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	G2	ND				111111111111111111111111111111111111111									*****	
	Gy	No														
	G6	NO														
	G8	40											AV-10-17-			
	GIO	NO				68400										
	FI	MO														
	F3	ND	,													
	F5	No														
	FV	No							1.000							
	Fg	NO														
	દર	ND							***************************************							
	Ey	No														
	E 4	NO														
1	E8	No	,													
+	810	NO														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00053
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0005
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, D

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	I Class			1 = ye	es, blank	= no	Fract. GO
Gria	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С_	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	HI .	ND										·				,
İ	H3	NO														
	HS	ND														
	47	ND														
	H)	ND														
	Ga	ND														
	G4	NO														
	G6	NO														
	G8	NO														
	GIB	NO														
	FI	No														
	F3	NO														
	F5	No														
4	FY	ND														
		prof 1	da												_	

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	3&T 3b0
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

ND

UN

ND

ND

ND

ND

ND

M

N

NO

No. of Structures

Total

Primary

EPA Sample Number:	BA-00054		
Sample Type (A=Air, D=Dust, DF = Dustfall):	A		
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1634		
Date received by lab	10/20/08		
Lab Job Number:	270801086		
Lab Sample Number:	270801086-0006		
Number of grids prepared	5		
Prepared by	K. Barnes		
Preparation date	10/20/08		
EPA COC Number:	L14651		
Secondary filter pore size (um)	0.2		

Identification

LA

R. Pescador
11/5/08
D
No
ISO
2708-EMR-96, E
Westmont
Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

NAM

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rules:							
Minimum Aspect Ratio (circle one):							
none 3:	≥ 5:1						
Minimum Length (um):	0.5						
Minimum Width (um):	None						

Stopping Rules: Target Sensitivity:	0,0001 V COU, O	_ -æ
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL
Volume applied to secondary filter (mL) or used for serial dilution
Third resuspension volume (mL)
 Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

Grid

Grid Opening

IZ

I4

J6

IZ

IO

HI

H3

HS

47

H9

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):

H_ Horizontal

H Horizon Vertical Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00054
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0006
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, E

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	62	ND		-												
	G4	ΝĐ														
	G6	170							Addition							
	68	ND														
	GIO	ND										,				
	Fi	ND														
	F3	NO							white the first							
	FJ	40														
	F7	No														
	* 9	ND														
	02	ND									,					
	04	ND														
	06	NO														
	08	NO														
1	DIØ	NO														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00054
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0006
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, E

Grid	Grid	Structure	No. of Structures		Dime	nsions	Identification	······	Minera	l Class_			1 = ye	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total_	Length	Width_		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	JI	ND				-						9				
	J3	ND												·		
	15	ND														
	J7	ND														
	J9	ND							,							
	I2	NO		***************************************												
	ΙÝ	ND														
	I6	NO						:								
	I8	ND														
	Ivo	No														
	GI	N0														
	G3	ND														
	GV	NP														
+	67	NO NO														
		SA WELL	ď													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00055
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1634
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0007
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	- D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, F
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconcillation, Lab Blank, Interlab)	Not QA
The state of the s	

F-Factor	Calcula	ition (Ind	irect Pre	ps Only):		
Enter	data in	appropri	iate cells	provided	to the	right

Recording Rules:								
le one):								
≥ 5:1								
0.5								
None								

	Y-L
Stopping Rules:	13-13-0
Target Sensitivity:	-0.0034 -10000-
Max # of GOs:	39
Target # of Structures:	50

F-factor Calculation:

Indirect Pro	ep Inputs
	Fraction of primary filter used for indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter

(mL) or used for serial dilution

Inputs for S	Serial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

C-1-1	Orid On anima	Structure			Dimensions		Identification	Min	eral Class	(see belo	W)	Sketch/ Comments	1 = yes, blank = no			Fract.
Grid	Grid Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch Comments	Sketch	Photo	EDS	Chrys.
1	GI	N														
Ĺ	G3	ND														
	GE	No														
	G7	NO														
	69	MO														
	F2	ND														
	FU	ND														
	F6	NO														
	F 8	ND														
1	F10	(V)														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

0	Vertica

Are prepped grids acceptable for analysis?	(circle one)	(P)	No
If No. explain:			

ii ito, expiairi.	

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00055
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0007
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, F

Grid	Grid Structure No. of Structures			Dime	nsions	Identification		Minera	l Class			1 = ye	Fract. GO			
GIIG	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	EI	ND							*****							,
<u> </u>	દરૂ	NÐ														
	25	NO								,			2300-200-2			
	ध	ND														
	E9)	ND														
	D2	ND														
	04	NO														
	06	ND														
	08	W														
	010	No														
	CI	ND													·	
	C3	ND														
	4	NO														
	C7	No														
1	19	NO														

LAB NAME EMSL27 270801086-0007 LAB SAMPLE NO.

EPA SAMPLE NO. SAMPLE TYPE

BA-00055 Α

QA TYPE Not QA

LAB JOB NUMBER

270801086 GRID STORAGE LOC. 2708-EMR-96, F

Grid	Grid	Structure No. of Structures Dimension			nsions	Identification		Minera	I Class			1 = ye	Fract. GO		
Gilu	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	EDS	Chrys.
2	12	Np	•										.,		
	J4	NO				******									
	16	No													
	J8	Ny	_			J213									
	J10	Np													
	HZ	Ny													
	H4	Na													
	H6	NO													
	H8	ND													
	410	ND										-			
	FZ	ND													
	F 4	NO													
	F6	NP								,					
4	F8	NO									,				
		A	Duls/vg												

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	385 360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

No. of Structures

Total

Primary

EPA Sample Number:	BA-00063
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1170
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0010
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Recording Rules:	
Minimum Aspect Ratio (o	circle one):
none 3:1	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	0,00241	7434
Target Sensitivity:	0 .000 4_	
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Pre	p Inputs
	Fraction of primary filter used for indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsa volume (mL)
	Volume applied to secondary filter

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter
(mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

(mL) or used for senal dilution

Input for Ashing of Secondary Filter
Fraction of secondary filter used for

ashing

(mL)

LA = Libby-typ	e amphibole
----------------	-------------

Grid

Grid Opening

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

C

OA

NAM

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Sketch

Grid openir	ng traverse	direction (circle one
-------------	-------------	-------------	------------

H Horizontal

V Vertical

f No, explain:			

Are prepped grids acceptable for analysis? (circle one) Yes No

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

ND

ND

ND

ND ND

ND

NO

ND

No. of Structures

Total

Primary

EPA Sample Number:	BA-00064
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1170
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0011
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

D Danadaa	
R. Pescador	
11/5/08	
D	
No	
ISO	
2708-EMR-96, G	
Westmont	
Not QA	

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

1 = yes, blank = no

Photo

Recording Rules:					
Minimum Aspect Ratio (circle one):					
none (≥ 3:1)	≥ 5:1				
Minimum Length (um):	0.5				
Minimum Width (um):	None				
-					

	<u>rl</u>	_
Stopping Rules:	(3-13-1	Ž.
Target Sensitivity:	0.6074 _10001	
Max # of GOs:	39	
Target # of Structures:	50	

F-factor	Calculatio	n:

Fract.

GO

Chrys.

EDS

ı	nd	irect	Prep	Input	s

Fraction of primary filter used for indirect prep or ashing
 [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter

Inputs for Serial Dilutions

Second resuspension volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution
Third resuspension volume (mL)
 Volume applied to connectory files

Input for Ashing of Secondary Filter

(mL)

Fraction of secondary filter used for

LA = Libby-type amphibole

Grid

Grid Opening

J3

U

J

17

I4

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

QΑ

NAM = Non-asbestos material

טווכ	obening	a sa set se	direction	(cucia	one
н	Hor	izontal			

Ø	Vertic:
---	---------

Are prepped grids acceptable for analysis?	(circle one)
If No, explain:	



LAB NAME EMSL27 LAB SAMPLE NO. 270801086-0011

BA-00064 EPA SAMPLE NO. SAMPLE TYPE Α

QA TYPE Not QA

LAB JOB NUMBER

270801086 GRID STORAGE LOC. 2708-EMR-96, G

	Grid	Structure	No. of Str	ructurae	Dime	nensions Identification Mineral Class					1 = yes, blank = no			Fract.		
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	C	NAM	Sketch/Comments	Sketch	Photo	EDS	GO Chrys.
,	.11		runary	rotar	Lengar	YYIOUT			<u> </u>		INCIN	OKERCII/COMMIENTS	OKCION	1 11010	LDO	
<u> </u>	HI	ND	,									·	•		,,,	
1	1 3	NO					· · · · · · · · · · · · · · · · · · ·									
	HZ	NO												.,,		
	t17	NO														
	+19	NO										-				
	Gr	ND														
	Gy	NP										***************************************				
	Gb	NO														
	G8	NO														
	GIO	ND											,			
	F1	NO.														
	F3	No							,							
	F 5	ND							` <u> </u>							
	F 7	No														
7	Fg	No														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00064
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0011
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, G

Grid	Grid	Structure	No. of Str	uctures	Dime	Dimensions		dentification Mineral Class					1 = ye	Fract. GO		
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2,	12	ND			A			•~		4						
1	14	ND													······································	
	J6	NO					,									
	78	NP														
	010	NO														
	II	No														
	I3	No														
	IL	NP														
	17	NO														
	I9	NP														
	HZ	No														
	H4	No														
	H6	No														
1	H8	NO Jestjuj														
		Psf 4	JUR .													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

ND

NO

NO

No. of Structures

Total

Primary

EPA Sample Number:	BA-00065
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1178
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0012
Number of grids prepared	5
Prepared by	K, Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

	1
Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose materior debris in the cowl? (Yes, No)	al No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

e one):
≥ 5:1
0.5
None

	اطا	ſæ
Stopping Rules:	KL	
Target Sensitivity:	0.0074 	
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter
(mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

177

Grid

Grid Opening

12

110

II

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):

H Horizontal

Are prepped grids acceptable for analysis?	(circle one)	(
If his prepiotes		



LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. 270801086-0012

EPA SAMPLE NO. BA-00065
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER 270801086

GRID STORAGE LOC. 2708-EMR-96, H

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	Fract.		
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	HZ	ND							1				,			
	114	NO														
	+16	NO														,
	H8	NO														
	HIO	No													,	
	GI	Nŋ														
	G3	No														
	GS	NO														
	67	No														
	69	No														
	FZ.	ND														
	 = 4	No														
	F.6	No														
	F8	No														
7	F10	No	·													

LAB NAME <u>EMSL27</u>
LAB SAMPLE NO. <u>270801086-0012</u>

EPA SAMPLE NO. BA-00065
SAMPLE TYPE A

QA TYPE Not QA LAB JOB NUMBER <u>270801086</u>

GRID STORAGE LOC. 2708-EMR-96, H

Grid	Grid	Structure	No. of St	ructures	Dime	nsions	Identification	dentification Mineral Class				1 = ye	Fract. GO			
	Opening	Туре	Primary	Total	Length_	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	J1 .	ND				1					ŀ					
	J3	NP													ortotalis (1977)	
	JJ	No													******	
	J7	No														
	19	No									_					
	GI	NO								<u> </u>						
	63	NO				•						,				
	GUT	סא														
	67	NO														
	69	NO					,									
	F2	NO														
	F4	No														
	F6	NO														
٠.,	F8	NO														
		est 14	1702													

Laboratory name;	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	. 100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00066
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1170
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0013
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, I
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA
, , , , , , , , , , , , , , , , , , , ,	

F-Factor Calculation (Indirect Preps Only): Enter data in appropriate cells provided to the right--->

Recording Rules:	
Minimum Aspect Ratio (cire	cle one):
none ≥ 3.1	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None
Minimum Width (um):	None

Stopping Rules:	0.0024 1; kr	HЭ
Target Sensitivity:	0.0001 0.0001	
Max # of GOs:	39	
Target # of Structures:	50	

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Min	eral Class	see belo	w)	Sketch/ Comments	1 = ye	es, blank	= no	Fract. GO
GIN	Grid Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	С	NAM	GREICHT COMMENTS	Sketch	Photo	EDS	Chrys.
<u> </u>	II	ND														
	13	No														
	IJ	NO										***************************************				
	1 7	No														
	D	Np									,					
	GI	No														
	લ્હ	NO														
	G5	No														
	G7	No														
J	G9	ND														

F-factor Calculation:

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for senal dilution Third resuspension volume (mL) Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00066

 LAB SAMPLE NO.
 270801086-0013
 SAMPLE TYPE
 A

A QA TYPE

Not QA

LAB JOB NUMBER 270801086
GRID STORAGE LOC. 2708-EMR-96, I

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
1	FZ	ND				· 				÷					t	
	FΨ	No														
	F6	ND														
	F8	No														
	FID	NO														
	٤1	NO														
	£3	ND														
	红	No								*						
	87	NO														
	29	NO														
	92	NO														
	Dψ	No					·									
	06	ND														
	ν_{8}	No														
1	010	No														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00066
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0013
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, I

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	***************************************		1 = ye	es, blank	= no	Fract. GO
Gilu	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	JZ	ND		1												
1	4	ND														
	Jb	ND														
	78	No													*****	
	JIO	ND														
	II	NO														
	I 3	ND														
	II	ND														
	I 7	NP														
	19	No														
	HZ	No														
	H4	ND														
	H6	No						-								
6	H8	NO											-			
		Rofin	Voy													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

ND

ND

ND

ND

ND

ND

ND

Grid Opening

H3

H5

117

H9)

GZ

G4

66

G8

610

Grid

No. of Structures

Total

Primary

BA-00067
A
1178
10/20/08
270801086
270801086-0014
5
K. Bames
10/20/08
L14651
0.2

Identification

LA

Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Minimum Aspect Ratio (circ	de one):
none 3	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None

	KL	
Stopping Rules:	0,0624	C
Target Sensitivity:	-0.0001-	
Max # of GOs:	39	
Target # of Structures;	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

Are prepped grids acceptable for analysis?	(circle one)	(es) No
If No, explain:		



LAB NAME EMSL27 270801086-0014 LAB SAMPLE NO.

EPA SAMPLE NO. BA-00067 SAMPLE TYPE Α

QA TYPE Not QA

LAB JOB NUMBER GRID STORAGE LOC. 2708-EMR-96, J

270801086

0:4	Grid	Structure	No. of Str	ructures	Dime	nsions	ldsifia-si	1	Minera	I Class			1 = ve	es, blank	= no	Fract.
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	GO Chrys.
1.	F1	ND								•					,	
	F3	ND						_								
	FS	NO														
	F7	NO														
	Fg	ND														
	EZ	ND														
	EY	ND														
	86	ND											·			
	88	MD						_								
	E10	ND						_								
	DI	MD						_								
	b 3	No						_		,						
	D 5	MO														
	D7	ND														
—	D9	ND														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00067
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0014
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, J

	Grid	Structure	No. of Str	uctures	Dime	nsions	1.1	***	Minera	l Class			1 = ve	es, blank	= no	Fract.
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch/Comments_	Sketch		EDS	GO Chrys.
2	II	NO	,				,									
	1 3	ND														
	It	No														
	II	No														
	I 9	ND														
	Hz	ND											F			
	th	No			-		- In									ks.
	HG	ND														
	H8	ND														
	HIO	NO											-		,	
	GI	NO								٠					**********	
	63	No														
	Gr	No														
	G7	NO														
		roff	KTH													

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	, 1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

Structure

Type

ND

No

NO

No

No. of Structures

Total

Primary

EPA Sample Number:	BA-00068
Sample Type (A=Air, D=Dust, DF = Dustfall):	Α
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1178
Date received by lab	10/20/08
Lab Job Number:	270801086
Lab Sample Number:	270801086-0015
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/08
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

Identification

LA

Analyzed by	R. Pescador
Analysis date	11/5/08
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	. No
Counting rules (ISO, AHERA, ASTM)	ISO
Grid storage location	2708-EMR-96, K
Archive filter(s) storage location	, Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right--->

Sketch

Recording Rules:	
Minimum Aspect Ratio (circ	cie one):
none 23:1	≥ 5:1
Minimum Length (um):	0.5
Minimum Width (um):	None
_	***************************************

	12-1	2
Stopping Rules:	7	
Target Sensitivity:	Y6000.00	
Max # of GOs:	39	
Target # of Structures:	50	

F-factor Calculation:

Fract.

GO

Chrys.

Indir	ect	Pre	р	'n	puts
(E-	~~	tion

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

Hb

Grid

Grid Opening

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

C = Chrysotile

Mineral Class (see below)

С

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one): H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:



LAB NAME EMSL27 270801086-0015 LAB SAMPLE NO.

EPA SAMPLE NO. BA-00068 Α SAMPLE TYPE

QA TYPE Not QA

LAB JOB NUMBER 270801086 GRID STORAGE LOC. 2708-EMR-96, K

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class		144	1 = <u>y</u> €	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments_	Sketch	Photo	EDS	Chrys.
1	61	ND	****				,		•					-		
	63	No														
	G5	NB														
	G7	NO														
	G9	ND							***************************************							
	FZ	NP														
	fψ	ND							***************************************	,					*********	
	F6	NO	ananana (* 1						111111111111111111111111111111111111111							
	F8	No	and a second sec													
	FIB	ND														
	El	No														
	£3	No													***************************************	
	25	No						_								
	E7	Ng														
1	29	NO														

 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00068
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0015
 SAMPLE TYPE
 A
 Not QA
 GRID STORAGE LOC.
 2708-EMR-96, K

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class			1 = ye	es, blank	= no	Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
2	J2	ND.														
	14	ND														
	J6	No														
	J8	No														
	016	No														
	II.	NO								,						
	13	NP														
	IT	NO														
	I7	No														
	19	ND														
	HZ	No														
	H4	ND														
	46	ND														
J	H8	ND														
			JU/JON													



Laboratory name:	EMSL27
Instrument	JEOL 100 CX (30)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

Structure

Type

00/ ND

NO

ND

NO

ND

No. of Structures

Total

Primary

Α
270801086
270801086
3
K. Barnes
10/20/08
L14651
0.2

Identification

LA

R. Pescador
11/5/08
D
No
ISO
2708-EMR-96, L
Westmont
Lab Blank

F-Factor Calculation (Indirect Preps Only):

Sketch/ Comments

Enter data in appropriate cells provided to the right---->

Sketch

Recording Rule		
Minimum Aspe	ct Ratio (circl	e one):
none	≥ 3:	≥ 5:1
Minimum Lengt	h (um):	0.5
Minimum Width	(um):	None

Stopping Rules:	
Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	50

F-factor Calculation:

Fract.

GO

Chrys.

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

inputs for Serial Dilutions

	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

LA = Libby-type amphibole

29

Grid

Grid Opening

FI

F3

FO

23

25

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

C = Chrysotile

Mineral Class (see below)

NAM

OA

NAM = Non-asbestos material

1 = yes, blank = no

Photo

EDS

Grid opening traverse direction (circle one):

H_ Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) If No, explain:



The Capality



Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100-
Magnification	19,000X
Grid opening area (mm2)	0.013
Scale: 1L =	
Scale: 1D =	1
Primary filter area (mm2)	381-
Secondary Filter Area (mm2)	366
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	BA-00068
Sample Type (A=Air, D=Dust, DF = Dustfall):	. A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	3178
Date received by lab	10/20/2008
Lab Job Number:	270801086
Lab Sample Number:	270801086-0015
Number of grids prepared	5
Prepared by	K. Barnes
Preparation date	10/20/2008
EPA COC Number:	L14651
Secondary filter pore size (um)	0.2

R. Pescador
12/1/2008
D
No
ISO
2708-EMR-96, K
Westmont
Recount Same

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right>

Recording Rule	er.
tebolulig sale	
Minimum Asper	d Ratio (circle one):
none	(≥3.1) ≥5:1
HUHE	
Minimum Lengt	h (um): 0.5
Minimum Width	(um): none

Stopping		
	ensitivity: 0.00024	
Target S		
Max # of		
		100
		TI.EL
Tamet #	of Structures PA	
Target#	of Structures: 50	
Target#	of Structures: 50	
Target#	of Structures: 50	
Target#	of Structures: 50	
Target#	of Structures: 50	

Grid	Grid Opening	Structure	No. of Structures		Dime	nsions	Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract.
Griu	Gna Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	С	NAM	Sketch Comments	Sketch	Photo	EDS	Chrys.
1	J2.	ND														
and in	J4	120														
	76	ND														
	J8	ND														
1	110	ND														
2	JZ	NO														
	14	NO														
	16	NO														
	18	ND														
4	110	M														

F-factor	Cataca	
-iacior	1.30031	anon

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one): Horizontal

Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:



 LAB NAME
 EMSL27
 EPA SAMPLE NO.
 BA-00067
 QA TYPE
 LAB JOB NUMBER
 270801086

 LAB SAMPLE NO.
 270801086-0014
 SAMPLE TYPE
 A
 Re-prep.
 GRID STORAGE LOC.
 2708-EMR-108, A

Grid	Grid	Structure	No. of Structures		Dimensions		- Identification	Mineral Class					1 = yes, blank = no			Fract. GO
	Opening	Туре	Primary	Total	Length	Width		LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	_EDS	Chrys.
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	Sustoay Re			LIDBY Aspestos investigation No. L14651									
From: CDM 60 Port Blvd, Ste. 200					1595 Wynkoop Street Denver, CO 80202-1129					EMSL-Mobile Lab 107 W 4th St			
											bby, MT 59923		
Libb	y, MT 59923									LIDDY, IVI	1 09923	33000777,000	
										via:	✓ hand delivery	shipped	
											Date Shipped:	10/2	0/2008
											Carrier Name:	Hand-de	livered
				270801086					Airbill: NA			<u>NA</u>	
Sample				Sample Media		Filter Pore	Turn						Sample
Placed in		Suffix	Sample	(S=Soil; W=Water;	Volume (L) or	Size	Around						Received
Cooler/Bag	Index ID	ID	Date	D=Dust; A=Air; B=Bulk Insulation)		(um)	Time	Analysis Request		Comments		by Lab	
	BA-00068		9/25/2008	A	• 1178 L	0.8	21 Day	TEM-ISO10312 (ISO 10312:1995 (E))		OU6RR0908-C		1	
,													
•				•	•				•	,			
Total Number of Samples15					END OF SUBMITTAL								
		15			CIAL	J OF 30	DIVILLIAL						
Additional Con	nments:												

/XI/. ·)		200	- 1		Au	11.0	4 1-1-1	10/		1	
Pau	(h /8:======	om	10.7	201.08 (2) Date/Time	21 E/N	un	YUM	att- Reserve &	MBL 10/201	10/155	1 Dh dace	ام	
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Political shoot	L VI NI		42 graves	/2/16/ 11 /41 Date/Time	, ,		nature and	toke Emsi	Va/4/08	9:00	y Comple		
r.emiquisned	by (\$)gnature	and CON	ipaliy) /	Daterrante	Veceiver	, ny (319	mature and	σοπραι <i>ιγ j</i>	Date/ IIIIE	Sar	nple Condition upon Re	ceipt	
Relinquished by (Signature and Company) Date/Time				Received by (Signature and Company) Date/Time					Sample Condition upon Receipt				
,			7		,,,,,,,,,	, \-'8	,		244-7 T 11110	Sai	npie Condition upon Re	reiht	
March 24, 200)5 Rev 3										Pag	e 2 of 2 🗸	•



APPENDIX H

SOIL SAMPLE LABORATORY REPORTS

JOMAY WYATT-PESCADOR 406-293-9066 EMSL ANALYTICAL, INC. 107 WEST 4TH STREET, LIBBY MT 59923

1 OF 1

SHIP TO: CHARLES LACERRA 856-858-4800 1253 EMSL ANALYTICAL, INC. 107 HADDON AVENUE

WESTMONT NJ 08108-2711



NJ 081 9-06

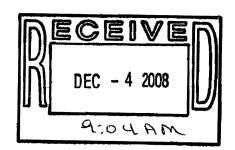
UPS GROUND

TRACKING #: 1Z Y84 048 03 9389 9115



BILLING: P/P





Page 1 of 1

EMSL Analytical, Inc.

107 Haddon Avenue

Westmont, New Jersey 08108

Phone: (856) 858-4800 Fax: (856) 858-9551



LETTER OF TRANSMITTAL

10:	Scott Carney	*	Date:	July 3,2009)	
	EMR, Inc.		From:	Charles E. 1	LaCerra	
	11 East Superior Street		Re:	Libby, MT	BNSF Work	
	Suite 260			Mobile Lab	Analytical Re	ports
	Duluth, MN 55802			See Below		
	Phone: 763-277-5200					
We are se	nding you: × Atta	ached		Under separ	ate cover via	
	Solicitation	Copy	of Letter		Invoice #'s S	See Below
	Subcontract	As no	oted		Other	
	Laboratory Samples	Analy	tical Repor	ts	~	5. · · ·
These are	transmitted as indicated	l below:				•
	ExecuteOriginal(s)	Revie	ew & Com	ment _	For Approval	l
	ReturnOrginal(s)	As Re	equested		Respond as in	nstructed
\boxtimes	For Your Information/File				Other	
Remarks:						
Enclosed p	please find one (1) copy of	the follow	ing mobil	e lab analytic	al reports for a	nalysis for
your review	w and use for the above re	ferenced p	roject:			
270900047	7					
Please feel	free to contact me with a	ny questior	ns or if you	ı require add	itional informa	tion
Copy to:			Signed:	Charleso	laCerra	

STANDARD LABORATORY DATA PACKAGE CHECKLIST

instructions: All applicable data package deliverables are included in the following nine pages. Using the print option will print out all forms necessary and in the appropriate order. Please provide information as directed.

Analytical Test Report Bulk Asbestos Analysis by Polarized Light Microscopy (PLM)

Prepared For:	EMR, Inc. 11 East Superior Street	_	
City/State:	Duluth, MN 55802		
Laboratory Name:	EMSL Analytical, Inc.	_	
City/State: Laboratory Job No.:	Libby, Montana 270900047		
Method Utilized			
(SOP and Rev. No.):	SRC-Libby-03, Rev. 1	_	
Circle One:	Visual Estimation Point Counting Approach		
Report Reviewed by:		_	
STANDARD LABOR	ATORY DATA PACKAGE CHECKLIST		
instructions:	For PLM analytical results raw data packages, complete and sign the following checklist. Attact supporting documentation as outlined below. Organize the supporting documentation in the order listed below. Paginate the completed raw data package.	Laboratory Verification (Initials and Date)	Validator Verification (Initials and Date)
1	Number of samples received: 79		
	An SDG is defined as no more than 200 samples.	UB 4/27/09	6/22/09 De
	Additional Supporting Documentation: Attach COC forms having footer R (report).	,	, ,
2	Date of sample receipt and condition of samples: 4/24/2009 OK For Condition of samples enter "OK" or "See SDG Case Narrative".	KB 4/27/09	6/22/02.0
3	SDG Case Narrative:		
	Additional Supporting Documentation: Attach SDG Narrative and any modification		
	forms.	CB4127109	6/22/2a
4			,
-	<u>Check for contamination (daily)</u> : Wipe microscope slides with lens paper before using Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.		A/6_
5	Verification of the refractive indices of the refractive index liquids once per month:		
-	Additional Supporting Documentation: Provide information indicating a monthly record of checking each of the four liquids including liquid name, lot number and		
	analyst initials. (See table - Results of RI Liquids Calibration)	1004/24/09	<u> </u>
6	Verification of microscope adjustments prior to each SDG:		
	Laboratory Verification initial and date signifies that this has been performed for the sample in this SDG.	CB4/27109	N) (n
		10.11	
7	<u>Reference material - Visual Estimation Approach:</u> Laboratory Verification initial and date signifies that this has been performed for the samples	2	
	in this SDG.	KB4/27/09	NIA
	Reference material - Point Counting Approach:		
	Additional Supporting Documentation: Provide calibration curve documentation,	هما مد الدور	
	printed from the EDD spreadsheet.	UB4/27/09	4/4
8	VE and/or PC hard copy data forms (as presented in the EDD spreadsheet):		
	Additional Supporting Documentation: Copies of the Hard Copy Data Forms for all		
	investigative samples and laboratory duplicates will be provided from systems that are entered electronically.	10 4/27/09	c/zz/og De
9	Bench sheets for data results:		•
	Additional Supporting Documentation: Provide copies of the hand written or LIMS system generated raw data sheets for sample results.	184/27-109	Gerlog de

COCs

Libby Asbestos Investigation

M.	DATA
No.	D2591

From: CDM	
2714 Walnut St	
Denver, CO 80205	

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EMSL-Westmont
	107 Haddon Ave
	Westmont, NJ 08108

09 APP 12 FILIZ: 40

a: hand delivery 🗹 shipped

 Date Shipped:
 4/22/2009

 Carrier Name:
 Fed-Ex

 Airbill:
 N/A

270900047

							2/0400047			
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix#	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab	
	RR-00001	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))			
	RR-00002	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))			
	RR-00003	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		7	
7	RR-00004	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		#	
	RR-00005	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		I	
	RR-00006	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))			
	RR-00007	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		T T	
7	RR-00008	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		4	
	RR-00009	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F	
7	RR-00010	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))			
	RR-00011	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))			

Total Number of Samples 79		END OF SUBMITTAL		
Additional Comments:				OC'd 989 042209
Com Madia Com 4 Relinquished by (Signature and Company)	22 09 200 Date/Time	R.K. Maha Emst N X 1030 Received by (Signature and Company)	4/24/69 /345 Date/Time	OK Accept Sample Condition upon Receipt
Relinquished by Signature and Company)	5/15/09/0836 Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

Libby Asbestos Investigation

N	ο.	D	2	5	9	1

From: CDM
2714 Walnut St
Denver, CO 80205

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EMSL-Westmont
	107 Haddon Ave
	Westmont, NJ 08108

09 APR 20 FR 12: 41

via: hand delivery shipped

 Date Shipped:
 4/22/2009

 Carrier Name:
 Fed-Ex

 Airbill:
 N/A

270900047

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Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
7	RR-00012	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00013	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))	William Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of th	
	RR-00014	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00015	FG	1	9/17/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00016	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
7	RR-00017	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00018	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00019	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
7	RR-00020	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		P
V	RR-00021	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00022	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		

Total Number of Samples	79		END OF SUBMITTAL		
Additional Comments:					QC'd 98904270
Carry Maduc Relinquished by (Signature and	O COM 41 d Company	1 1 1 1 1 1 1	Received by (Signature and Company)	4/24/69 1345 Date/Time	Sample Condition upon Receipt
Relinquished by Signature and		9/- / / //	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature an	d Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

#### **Libby Asbestos Investigation**

No.	D2591

From: CDM	
2714 Walnut St	
Denver, CO 80205	

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to: EMSL-Westmont	and the Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and Art of Branchist and A
107 Haddon Ave	
Westmont, NJ 081	08

09 AFT 53 PHIZ: 41

	hand	delivery	<b>Y</b>	shipped
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 Date Shipped:
 4/22/2009

 Carrier Name:
 Fed-Ex

 Airbill:
 N/A

7.70900047

via:

							270900047		
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00023	FG	1	9/18/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		4
1	RR-00025	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00026	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		J.
	RR-00027	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
7	RR-00028	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00029	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00030	FG	1	9/19/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00031	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		P
	RR-00032	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
<b></b>	RR-00033	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
	RR-00034	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		<b>I</b>

Total Number of Samples79	END OF SUB	MITTAL	
Additional Comments:			OCID JEgouzze
Carry Madrid Com 4 Relinquished by (Signature and Company)		Acros EMSC 4/24/09 134 ature and Company) Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	5/15/A / 63% Date/Time Received by (Sign	ature and Company) Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time Received by (Sign	ature and Company) Date/Time	Sample Condition upon Receipt

#### **Libby Asbestos Investigation**

AL.	B0=04
No.	D2591

From: CDM	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s
2714 Walnut St	
Denver, CO 80205	

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EMSL-Westmont
	107 Haddon Ave
	Westmont, NJ 08108

09 APR 10 PH 12: 41

hand delivery shipped

 Date Shipped:
 4/22/2009

 Carrier Name:
 Fed-Ex

 Airbill:
 N/A

270900047

							270900047		
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00035	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		1
	RR-00036	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		The second
	RR-00037	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00038	FG	1	9/22/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00039	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00040	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00041	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))	······································	
	RR-00042	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
	RR-00043	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00044	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
	RR-00045	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Additional Comments:				OC'd 484 042209
Carrie Madrid COM 4 Relinquished by (Signature and Company) Elville J. Ill. mt-Per condo /2msl	22 09 1200 Date/Time	Received by (Signature and Company)	7/24/09 1345 Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

**END OF SUBMITTAL** 

Total Number of Samples

Denver, CO 80205

#### **Libby Asbestos Investigation**

No.	D2591
IIO.	U2331

From:	CDM
	2714 Walnut St

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to: EMSL-Westmont 107 Haddon Ave Westmont, NJ 08108

09 ATT 23 PH 12: 41

via: hand delivery

✓ shipped

RECEIVED LASE TO THE

Date Shipped: Carrier Name: 4/22/2009 Fed-Ex

Airbill: ____N/A

270900047 Sample

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soii; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00046	FG	1	9/23/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		A Part
	RR-00047	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00048	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00049	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00050	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00051	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))	······································	
	RR-00052	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		1
	RR-00053	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00054	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00055	FG	1	9/24/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		1
7	RR-00056	FG	1	9/25/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		

Total Number of Samples		END OF SUBMITTAL		
Additional Comments:				QCH 989 042209
Carre Madrid Con Relinquished by Signature and Company, Christy J. Wath - Placolot / 4	M 4/22/09 1200 Date/Time Syns2 5/15/09/68		<u> </u>	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

Denver, CO 80205

#### **Libby Asbestos Investigation**

No. I	259	
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From:	CDM
	2714 Walnut St

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Date/Time

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EMSL-Westmont
	107 Haddon Ave
	Westmont, NJ 08108

via: 🗌 hand delivery 🗹 shipped

 Date Shipped:
 4/22/2009

 Carrier Name:
 Fed-Ex

Airbill: N/A

09 APR 20 PM 12: 41

RESPENSE

270900047 Sample Sample Matrix Turn Sample (S=Soil; W=Water: Around Received by Placed in Sample D=Dust, A=Air;B=Bulk Suffix # Time **Analysis Request** Lab Cooler/Bag Index ID Suffix ID* Date Comments Insulation) 3 Day PLM-VE (SRC-Libby-03 (rev 2)) RR-00057 FG 9/25/2008 S S PLM-VE (SRC-Libby-03 (rev 2)) RR-00058 FG 9/25/2008 3 Day RR-00059 FG 9/25/2008 S 3 Day PLM-VE (SRC-Libby-03 (rev 2)) RR-00060 FG 1 9/25/2008 S 3 Day PLM-VE (SRC-Libby-03 (rev 2)) S RR-00061 FG 1 9/25/2008 3 Day PLM-VE (SRC-Libby-03 (rev 2)) RR-00062 FG 9/25/2008 S 3 Day PLM-VE (SRC-Libby-03 (rev 2)) FG S RR-00201 10/31/2008 3 Day PLM-VE (SRC-Libby-03 (rev 2)) FG S RR-00202 10/31/2008 3 Day PLM-VE (SRC-Libby-03 (rev 2)) S RR-00203 FG 1 10/31/2008 3 Day PLM-VE (SRC-Libby-03 (rev 2)) FG s PLM-VE (SRC-Libby-03 (rev 2)) RR-00204 1 11/3/2008 3 Day RR-00205 FG 11/4/2008 S 3 Day PLM-VE (SRC-Libby-03 (rev 2))

Total Number of Samples 79 END OF SUBMITTAL

Additional Comments:

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Analylia Reson Cony

Received by (Signature and Company)

Date/Time

Relinquished by (Signature and Company)

Sample Condition upon Receipt

Apr 24, 2003 Rev 1

Denver, CO 80205

#### **Libby Asbestos Investigation**

No.	D2591
110.	D 2 0 0 1

rom:	CDM
	2714 Walnut St

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to	: EMSL-Westmont
	107 Haddon Ave
	Westmont, NJ 08108

09 APR 23 PH 12: 41

via: hand delivery shipped

and some one of the same of the

Date Shipped: 4/22/2009
Carrier Name: Fed-Ex

Page 7 of 8

Airbill: N/A

							FMS1 27		
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix#	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	MTSTMARE (1)  Analysis Request	Comments	Sample Received by Lab
	RR-00206	FG	1	11/4/2008	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
7	RR-00207	FG	1	4/13/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		7
7	RR-00208	FG	1	4/14/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
12	RR-00209	FG	1	4/14/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		7
7	RR-00210	FG	1	4/14/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
7	RR-00211	FG	1	4/15/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		二二
	RR-00212	FG	1	4/15/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		J.
	RR-00213	FG	1	4/15/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		
	RR-00214	FG	1	4/17/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		- F
7	RR-00215	FG	1	4/17/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		F
	RR-00216	FG	1	4/17/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples		END OF SUBMITTAL		
Additional Comments:				OC'd 989 042209
Carrie Madrid CDM 4 Relinquished by (Signature and Company) Elyth J. Watt-Ples cardon Ems.	1 5/15/19/0836	ooned by (organical orange and	4/24/09 /345 Date/Time	Campic Condition apon Nocospe
Relinquished by (Signature and Company)		ceived by (Signature and Company) ceived by (Signature and Company)	Date/Time	Sample Condition upon Receipt  Sample Condition upon Receipt

Produce Report Copy

Chain of Custody Record  From: CDM  2714 Walnut St  Denver, CO 80205				U.S. Environr 9			10	//////////////////////////////////////		2591	
						09 /PR 23 PM 12: 41 RECHIVED EMSI.	via 27090c	Date Shipped: Carrier Name: Airbill:		eed 4/22/2009 Fed-Ex N/A	
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Reque		Comme	nts	Sample Received by Lab
7	RR-00217	FG	1	4/21/2009	S	3 Day	PLM-VE (SRC-Libby-03	3 (rev 2))			
7	RR-00218	FG	1	4/21/2009	S	3 Day	PLM-VE (SRC-Libby-03	3 (rev 2))			7
*Suffix IDs: C= Co  Total Number  Additional Co	r of Samples	ine; FG= Fine Ground;	CA≂ Archive C	oarse; BA≃ Archive	e Bulk; FA= Archive Fine; FG END OF	SA=Archive Fine Gr SUBMITTAL	ound				
Cari	e Mada	ind cr	om 4	22 09   Date/Time	1206 n.	r on all	2 - Le & MSC 4/2	u   49 1345	0K B	M 200 200 200 200 200 200 200 200 200 20	
Relinquished Relinquished	Q What	e and Company) - Percedo e and Company)	2 /smsl		0836	(Signature and			Sample Condition up		

Date/Time

Received by (Signature and Company)

Relinquished by (Signature and Company)

Sample Condition upon Receipt

Date/Time

4/24/2009 3:31:46 PM

Order ID: 270900047

Attn:

Fax:

**Scott Carney** 

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

11/3, 4, 4/13, 14, 15, 17, 21

Customer ID

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

EMSL Order:

270900047

EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Test: PLM Libb	by VE <u>M</u>	atrix Soils	TAT:	72 Hour	<u>Qty</u>	<u>.</u> 79	
Acct Sts:	Slsprsn:	epodell	Logged:	rmahoney	Date:	4/24/2009	,
Inter- Lab Sample 7	<u> Fransfer</u>		Sample Condition	<ul><li>☑ Acceptab</li><li>☐ Unaccept</li></ul>		•	
Samples Reline	quished:	Date	Comments	No prep involve	ed, only an	alysis.	
Samples Recei	ved:	Date		•	, ,		
Package Maile	d to Westmont:	Date		No. 6 Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contra			
Method of Deli	very:		Initial Pre	p (Initials/Lab):	KIB	Date: 4/27	4/30/0
Includes: (Circ	le)		Filter Prep	o (Initials/Lab):		Date:	
Benchsheets	Sample Slides	Sample filters	Grid Prep	(Initials/Lab):		Date:	
Micrographs	GridBox	Other	For Special F	Projects Use Only:	Water Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the Constitution of the		1
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Final Package Re	eceivea.	Date:	Date Pac	kage Review:	TP	Date: 429	Þ٩
			Date Pac	kage Mailed:	عد	Date: 7/3/	09

#### **Special Instructions**

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0001	RR-00001		4/27/2009 1:45:00 PM
270900047	270900047-0002	RR-00002		4/27/2009 1:45:00 PM
270900047	270900047-0003	RR-00003		4/27/2009 1:45:00 PM
270900047	270900047-0004	RR-00004		4/27/2009 1:45:00 PM
270900047	270900047-0005	RR-00005		4/27/2009 1:45:00 PM
270900047	270900047-0006	RR-00006		4/27/2009 1:45:00 PM
270900047	270900047-0007	RR-00007		4/27/2009 1:45:00 PM
270900047	270900047-0008	RR-00008		4/27/2009 1:45:00 PM

4/24/2009 3:31:46 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

11/3, 4, 4/13, 14, 15, 17, 21

Customer ID

**Customer PO:** 

Received:

04/24/09 1:45 PM

EMSL Order:

270900047

EMRI78

EMSL Proj ID: **Cust COC ID** 

BNSF Libby, MT 2008

270900047 270900047	270900047-0009 270900047-0010	RR-00009 RR-00010	4/27/2009 1:45:00 PM
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			4/27/2009 1:45:00 PM
270900047	270900047-0011	RR-00011	4/27/2009 1:45:00 PM
270900047	270900047-0012	RR-00012	4/27/2009 1:45:00 PM
270900047	270900047-0013	RR-00013	4/27/2009 1:45:00 PM
270900047	270900047-0014	RR-00014	4/27/2009 1:45:00 PM
270900047	270900047-0015	RR-00015	 4/27/2009 1:45:00 PM
270900047	270900047-0016	RR-00016	4/27/2009 1:45:00 PM
270900047	270900047-0017	RR-00017	4/27/2009 1:45:00 PM
270900047	270900047-0018	RR-00018	4/27/2009 1:45:00 PM
270900047	270900047-0019	RR-00019	4/27/2009 1:45:00 PM
270900047	270900047-0020	RR-00020	4/27/2009 1:45:00 PM
270900047	270900047-0021	RR-00021	4/27/2009 1:45:00 PM
270900047	270900047-0022	RR-00022	4/27/2009 1:45:00 PM
270900047	270900047-0023	RR-00023	4/27/2009 1:45:00 PM
270900047	270900047-0024	RR-00025	4/27/2009 1:45:00 PM
270900047	270900047-0025	RR-00026	4/27/2009 1:45:00 PM
270900047	270900047-0026	RR-00027	4/27/2009 1:45:00 PM
270900047	270900047-0027	RR-00028	4/27/2009 1:45:00 PM
270900047	270900047-0028	RR-00029	4/27/2009 1:45:00 PM

4/24/2009 3:31:46 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

11/3, 4, 4/13, 14, 15, 17, 21

Customer ID

**Customer PO:** 

Received:

EMRI78

04/24/09 1:45 PM

EMSL Order:

**Cust COC ID** 

270900047

EMSL Proj ID:

BNSF Libby, MT 2008

270900047	270900047-0029	RR-00030	4/27/2009 1:45:00 PM
270900047	270900047-0030	RR-00031	4/27/2009 1:45:00 PM
270900047	270900047-0031	RR-00032	4/27/2009 1:45:00 PM
270900047	270900047-0032	RR-00033	4/27/2009 1:45:00 PM
270900047	270900047-0033	RR-00034	4/27/2009 1:45:00 PM
270900047	270900047-0034	RR-00035	4/27/2009 1:45:00 PM
270900047	270900047-0035	RR-00036	4/27/2009 1:45:00 PM
270900047	270900047-0036	RR-00037	4/27/2009 1:45:00 PM
270900047	270900047-0037	RR-00038	4/27/2009 1:45:00 PM
270900047	270900047-0038	RR-00039	4/27/2009 1:45:00 PM
270900047	270900047-0039	RR-00040	4/27/2009 1:45:00 PM
270900047	270900047-0040	RR-00041	4/27/2009 1:45:00 PM
270900047	270900047-0041	RR-00042	4/27/2009 1:45:00 PM
270900047	270900047-0042	RR-00043	4/27/2009 1:45:00 PM
270900047	270900047-0043	RR-00044	4/27/2009 1:45:00 PM
270900047	270900047-0044	RR-00045	4/27/2009 1:45:00 PM
270900047	270900047-0045	RR-00046	4/27/2009 1:45:00 PM
270900047	270900047-0046	RR-00047	4/27/2009 1:45:00 PM
270900047	270900047-0047	RR-00048	4/27/2009 1:45:00 PM
270900047	270900047-0048	RR-00049	4/27/2009 1:45:00 PM

4/24/2009 3:31:46 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

11/3, 4, 4/13, 14, 15, 17, 21

**Customer ID** 

Customer PO:

Received:

04/24/09 1:45 PM

EMSL Order:

270900047

EMRI78

EMSL Proj ID: **Cust COC ID** 

BNSF Libby, MT 2008

270900047	270900047-0049	RR-00050	4/27/2009 1:45:00 PM
270900047	270900047-0050	RR-00051	4/27/2009 1:45:00 PM
270900047	270900047-0051	RR-00052	4/27/2009 1:45:00 PM
270900047	270900047-0052	RR-00053	4/27/2009 1:45:00 PM
270900047	270900047-0053	RR-00054	4/27/2009 1:45:00 PM
270900047	270900047-0054	RR-00055	4/27/2009 1:45:00 PM
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270900047	270900047-0057	RR-00058	4/27/2009 1:45:00 PM
270900047	270900047-0058	RR-00059	4/27/2009 1:45:00 PM
270900047	270900047-0059	RR-00060	4/27/2009 1:45:00 PM
270900047	270900047-0060	RR-00061	4/27/2009 1:45:00 PM
270900047	270900047-0061	RR-00062	4/27/2009 1:45:00 PM
270900047	270900047-0062	RR-00201	4/27/2009 1:45:00 PM
270900047	270900047-0063	RR-00202	4/27/2009 1:45:00 PM
270900047	270900047-0064	RR-00203	4/27/2009 1:45:00 PM
270900047	270900047-0065	RR-00204	4/27/2009 1:45:00 PM
270900047	270900047-0066	RR-00205	4/27/2009 1:45:00 PM
270900047	270900047-0067	RR-00206	4/27/2009 1:45:00 PM
270900047	270900047-0068	RR-00207	4/27/2009 1:45:00 PM

4/24/2009 3:31:46 PM

Order ID: 270900047

Attn:

Fax:

**Scott Carney** 

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Phone: (218) 625-2332

Project:

(218) 625-2337

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

11/3, 4, 4/13, 14, 15, 17, 21

**Customer ID** 

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

EMSL Order:

270900047

BNSF Libby, MT 2008

**Cust COC ID** 

EMSL Proj ID:

270900047	270900047-0069	RR-00208	4/27/2009 1:45:00 PM
270900047	270900047-0070	RR-00209	4/27/2009 1:45:00 PM
270900047	270900047-0071	RR-00210	4/27/2009 1:45:00 PM
270900047	270900047-0072	RR-00211	4/27/2009 1:45:00 PM
270900047	270900047-0073	RR-00212	4/27/2009 1:45:00 PM
270900047	270900047-0074	RR-00213	4/27/2009 1:45:00 PM
270900047	270900047-0075	RR-00214	4/27/2009 1:45:00 PM
270900047	270900047-0076	RR-00215	4/27/2009 1:45:00 PM
270900047	270900047-0077	RR-00216	4/27/2009 1:45:00 PM
270900047	270900047-0078	RR-00217	4/27/2009 1:45:00 PM
270900047	270900047-0079	RR-00218	4/27/2009 1:45:00 PM

4/24/2009 3:32:09 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Test: PLM Libi	y VE	<u>Matrix:</u>	Soils	TAT: 72 Hour	<b>Qty:</b> 79
Order ID	Lab Sample #	Cust. Sample #	Location		Due Date
270900047	270900047-0001	RR-00001			4/27/2009 1:45:00 PM

Co	omments:	 	

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Rilan	Date:	Y/30/09
Osta Entry:	رصر	Date:	4/30/09
Siructore Review:		Oste:	ι /
Data Velikiation:	TP	Date:	5/109
Reported to Chent:	79	Date:	5/109

Micrograph Number	Type Offraction or Morphology

4/24/2009 3:32:09 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0002	RR-00002		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	R Km	Date:	4/30/09
Data Entry:	عد	Date:	4/30/09 5/109
Structure Reviews		Data:	
Osts Velitidation:	TP	Date:	51109
Reported to Olient:	TP	Dale:	51109

Micrograph Number	Type Offraction or Morphology

4/24/2009 3:32:10 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

270900047

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

EMSL Order:

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0003	RR-00003		4/27/2009 1:45:00 PM

Comments:	
Comments.	

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	or.	Date:	5/409
Sinucture Review:		Date:	
Data Valitdation:	40	Date:	Slug
Reported to Gilent:	40	Dates	51 409

Micmgraph Number	Type Offraction or Morphology
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4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: EMSL Proj ID:

270900047 BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0004	RR-00004		4/27/2009 1:45:00 PM

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Comments:		,	

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Ozia Entry:	- Qu	Date:	5/1/09
Structure Reviews		Date:	1-1
Data Valiidation;	TP	Date:	57109
Reported to Client:	18	Date:	51109

Micrographs: Micrograph Number Турю Diffraction or Morphology

4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Proj ID:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0005	RR-00005		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	oi	Oste:	5/1/09
Structure Review:		Dates	170
Osta Valildation:	78	Date:	57409
Reported to Citeat:	18	Oaie:	5/1/09

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0006	RR-00006		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	UB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Ricon	Date:	4/30/09
Osta Entry:	o.	Date:	57409
Structure Review:		Date:	
Data Validation:	10	Date:	57109
Reported to Chent:	18	Date:	5/1/09

M	iorogreph Number	Type Chifraction or Morphology
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4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591 Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0007	RR-00007		4/27/2009 1:45:00 PM

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	R Konj	Date:	4/30/09
Data Entry:	ei	Date:	51.109
Structure Roview:		Date:	21.40
Data Validation:	Q	Date:	51109
Reported to Chent:	+8	Dale:	5/1/09

Micmgreph Number	Type Orfraction or Morphology

4/24/2009 3:32:10 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0008	RR-00008		4/27/2009 1:45:00 PM

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Comments:		

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Rica	Date:	4/30/09
Oata Entry:	ei	Date:	51 Jag
Simoture Review:		Oats:	170
Data Validation:	TR	Date:	Sulag
Reported to Chent:	18	Date:	51109

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	Micrograph Number	Type Diffraction or Morphology	

4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

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BNSF Libby, MT 2008

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**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0009	RR-00009		4/27/2009 1:45:00 PM

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Rlen	Date:	4/30/09
Ossa Entry:	ren	Date:	571/09
Structure Review:		Date:	1-10,
Data Validation:	18	Date:	57409
Reported to Citent:	TP	Date:	5/1/09

Microgreph Number	Type Orffrection or Morphology
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4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMSL Order: 270900047 EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0010	RR-00010		4/27/2009 1:45:00 PM

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Comments:	

ANALYZED:	KB	Date:	4/27/09	
Preliminary Data Sent to Special Projects:	R ICM	Date:	4/30 / 09	
Osia Entry:		Oste:	5/109	
Simol <b>ure</b> Roview:		Date:	1 10	
Data Validation:	TP	Date:	5/1/09	
Reported to Client:	TP	Date:	Slylog	

Microgreph Number	Type Diffrection or Morphology

4/24/2009 3:32:10 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

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4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0011	RR-00011		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RICM	Date:	4/30/09
Osta Entry:	.OI	Date:	5140
Structure Review:		Dates	
Osta Valiidation:	TP	Date:	57109
Reported to Offent:	78	Date:	51.109

Miomgraph Number	Type		
	Diffraction or Morphology		

4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

**Cust COC ID** 

270900047

04/24/09 1:45 PM

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0012	RR-00012		4/27/2009 1:45:00 PM

Comments:	-	

ANALYZED:	KB	Date:	4/24/89
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	ىق.	Date:	5/1/09
Structure Review:		Date:	
Data Valildation:	48	Date:	5/1/09
Reported to Chest:	19	Date:	5/109

Microgreph Number	Type		
~	Diffraction or Morphology		

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Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0013	RR-00013	***************************************	4/27/2009 1:45:00 PM

Comments:			

ANALYZED:	LB	Date:	PO17514
Preliminary Data Sent to Special Projects:	Riam	Date:	4/80/09
Ozea Entry:	ac	Date:	5/1/09
Sinucture Review:		Deta:	1 1
Data Validation:	TP	Date:	5/1/09
Reported to Client:	TP	Daie:	51109

	Micrograph Number	Type Offraction or Morphology
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4/24/2009 3:32:10 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMSL Order:

04/24/09 1:45 PM

EMRI78

270900047

EMSL Proj ID: Cust COC ID

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0014	RR-00014		4/27/2009 1:45:00 PM

Comments:
Comments.

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKIN	Date:	4/30/09
Osta Entry:	ei	- Date:	51109
Sinucture Review:	<u> </u>	Date:	11
Osta Validation:	<b>₹</b>	Date:	51109
Reported to Chent:	TP	Dates	5/1/09

Micrograph Number	Type Orffraction or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMSL Order:

EMSL Proj ID:

270900047

EMRI78

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0015	RR-00015		4/27/2009 1:45:00 PM

-	Comments:	 	

ANALYZED:	KO_	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Oata Entry:	.ou	Date:	4/30/09 571/09
Sinucture Review:		Date:	L I
Data Valiidation:	TP	Date:	5/1/09
Reported to Client:	TP	Date:	57109

Micrograph Number	Type Orfraction or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

**Cust COC ID** 

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EMRI78

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0016	RR-00016		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	427109
Preliminary Data Sent to Special Projects:	R Km	Date:	4/30/09
Osta Entry:	عو	Date:	57409
Structure Reviser:		Data:	11.
Data Validation;	18	Date:	5/1/09
Reported to Chent:	18	Date:	57409

. Microgreph Number	Type Chiffraction or Morphology	
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4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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270900047

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

EMSL Order:

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0017	RR-00017		4/27/2009 1:45:00 PM

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ANALYZED:	US .	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Osta Entry:	ei	Date:	5/1/09
Structure Roview:		Date:	
Osta Validation:	18	Date:	5/409
Reported to Citeat:	18	Daie;	51109

Type Diffraction or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

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EMSL Order:

270900047 BNSF Libby, MT 2008

EMRI78

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0018	RR-00018		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	KB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	R ICM	Date:	4/30/09
Data Entry:	.OL	Date:	51409
Structure Review:		Detai	L. [
Data Valiidation:	TP	Date:	57109
Reported to Client:	TP	Daie:	5/1/09

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4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

270900047 BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0019	RR-00019		4/27/2009 1:45:00 PM

-	Comments:		

ANALYZED:	KPS	Date:	4/27/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Oata Entry:	e.	Sate:	51109
Structure Review:		Osta:	
Data Valildation:	TP	Date:	5/1/09
Reported to Chest:	TP	Daie:	57,109

Microgreph Number	Type Orffraction or Morphology

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Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 Fax: Project:

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

Cust COC ID

EMRI78

04/24/09 1:45 PM

270900047

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0020	RR-00020		4/27/2009 1:45:00 PM

Comments:	
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ANALYZED:	UB	Date:	4/27/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Osta Entry:	œ	Date:	57409
Structure Review:		Date:	ν ι
Data Valildation:	TP	Date:	57409
Reported to Chent:	TP	Date:	51,005

Micrograph Number	Type Diffraction or Morphology
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4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0021	RR-00021		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	42709
Preliminary Data Sent to Special Projects:	Rican	Date:	4/30/09
Data Entry:	ال	Date:	57109
Simoture Review:		Dete:	
Osta Valiidation:	TP	Date:	5/1/09
Reported to Chent:	16	Daie:	51109

Mic	rograph Number	Type Orffraction or Morphology

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Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

EMSL Proj ID: Cust COC ID

EMSL Order:

EMRI78 Customer ID:

Customer PO:

Received:

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270900047

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0022	RR-00022		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Oata Entry:	Q.	Oste:	571/09
Siructure Review:		Date:	
Data Velädation:	TD	Date:	57409
Reported to Glieni:	TP	Dates	57109

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4/24/2009 3:32:11 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

**Scott Carney** 

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Order:

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04/24/09 1:45 PM

270900047

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0023	RR-00023		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	R/cm	Date:	4/30/09
Osta Entry:	عد	Date:	5/1/09
Sinucture Review:		Date:	
Data Yalildation:	TP	Date:	571/09
Reported to Client:	-PP	Daie:	57109

Micrograph Number	Type Diffraction or Morphology
:	

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Project:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

270900047 EMSL Order:

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0024	RR-00025		4/27/2009 1:45:00 PM

Comments:
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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	R Kun	Date:	4/30/09
Data Entry:	ے د	Date:	51409
Simicture Review:		Osta:	
Data Valiidation:	18	Date:	51109
Reported to Chent	TP	Date:	5/1/09

Micrograph Number	Type Orfrection or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project:

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0025	RR-00026		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data Entry:	oc	Date:	4/30/09 51409
Structure Review:		Date:	61
Data Valiidation:	TP	Oate:	57409
Reported to Offent:	TP	Daio:	51109

Miomgreph Number	Type Chiffrection or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

**Cust COC ID** 

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0026	RR-00027		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	R Kan	Date:	4/30/09
Data Entry:	.ou	Oste:	511)09
Structure Review:		Data:	
Data Valiidation:	TP	Date:	571)09
Reported to Cheat:	TP	Date:	511/09

Micrograph Number	Type Orffrection or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0027	RR-00028		4/27/2009 1:45:00 PM

Comments:	, , , , , , , , , , , , , , , , , , , ,	

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKIN	Date:	4/30/09
Data Entry:	ے ہے۔	Oste:	5/1/09
Structure Review:		Date:	
Data Valiidation:	78	Oate:	5/1/09
Reported to Chent:	TP	Outes	5/1/09

Micrograph Number	Type
* .	Diffraction or Morphology

4/24/2009 3:32:11 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project: (218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Proj ID:

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EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	 Due Date	_
270900047	270900047-0028	RR-00029		4/27/2009 1:45:00 PM	'

Comments:		

ANALYZED:	KPS	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data Entry:	QL.	Dite:	571/09
Siructure Review:	-	Date:	
Data Validation:	- TP	Date:	57109
Reported to Chent:	18	Date;	5/1/09

Micrograph Number	Type Offrection or Morphology
	·

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMRI78

EMSL Order:

EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0029	RR-00030		4/27/2009 1:45:00 PM

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ANALYZED:	KM	Date:	4/28/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Data Entry:	Oi.	Oste:	4/30/09 51409
Simicium Review:		Date:	
Data Validation:	TP	Date:	571/09
Reported to Cheat:	_tP	Owie:	5/1/09

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4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMRI78

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270900047

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0030	RR-00031		4/27/2009 1:45:00 PM

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ANALYZED:	UB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/04
Date Entry:	191	Oste:	4/30/00 57409
Simolure Review:		Date:	1 1
Data Valiidation:	TP	Date:	51409
Reported to Client:	78	Date:	57409

Micrograph Number	Type Diffraction or Morphology
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4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

D2591

(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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270900047

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0031	RR-00032		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	R/cm	Date:	4/30/09
Data Entry:	, کب	Date:	51109
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Data Validation:	48	Date:	57409
Reported to Client:	18	Daie:	5/1/09

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4/24/2009 3:32:12 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

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BNSF Libby, MT 2008

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EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0032	RR-00033		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKIM	Date:	4/30/09
Osta Entry:	le	Date:	5/1/09
Structure Review:		Date:	
Data Valiidation:	76	Date:	5/1/09
Reported to Chest:	TP	Date:	57109

Micrograph Number	Type Oiffraction or Morphology
	Oiffraction or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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04/24/09 1:45 PM

EMRI78

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BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0033	RR-00034		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	Rica	Date:	4/30/09
Osta Entry:	er	Date:	5/1/09
Structure Review:		Oats:	
Osta Validation:	18	Date:	5/1/09
Reported to Client:	78	Daie:	51/109

Micrograph Number	Type Diffraction or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

Phone: (218) 625-2332

D2591 Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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EMSL Order:

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EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0034	RR-00035		4/27/2009 1:45:00 PM

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKIN	Date:	4/30/09
Dam Entry:	<u>و</u>	Oste:	57408
Structure Review:		Date:	· (*
Data Valiidation:	78	Date:	9/109
Reported to Client:	78	Daie:	5/1/09

Microgreph Number	Type Orffrection or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591 Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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EMSL Order:

EMSL Proj ID:

270900047 BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0035	RR-00036		4/27/2009 1:45:00 PM

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Botry:	101-	Date:	51109
Sinuct <b>ure Review:</b>		Date:	
Osta Validation:	78	Date:	571/09
Reported to Cheat:	78	Daie:	51109

Miorograph Number	Type Offraction or Morphology
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4/24/2009 3:32:12 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: (218) 625-2337 Project:

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Order:

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EMRI78

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270900047

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0036	RR-00037		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/20/09
Osta Entry:	<u>o</u> u	Date:	571/09
Sinuature Review:		Date:	
Data Valildation:	TP	Date:	5/1/09
Reported to Client:	79	Date:	57109

Microgreph Number	Type Offraction or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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270900047 EMSL Order:

EMSL Proj ID: Cust COC ID

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0037	RR-00038		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data Entry:	<u>ە</u> ب	Date:	51109
Structure Roviner		Deta:	
Data Validation:	TP	Date:	5/109
Reported to Chent:	79	Daie:	57409

Miorogreph Number	Type
4	Diffraction or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0038	RR-00039		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	l K m	Date:	4/80/09
Osta Entry:	ركيب	Date:	511/09
Simicture Roview:		Date:	t t
Oata Valiidation:	78	Date:	571109
Reported to Client:	TR	Date:	51.109

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	Mioregraph Number	Type Offrection or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

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04/24/09 1:45 PM

270900047

EMRI78

EMSL Order: EMSL Proj ID: Cust COC ID

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0039	RR-00040		4/27/2009 1:45:00 PM

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ANALYZED:	KB .	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data Entry:	o.	Date:	4/30/09 51,109
Structure Review:		Date:	6.7
Data Valiidation:	18	Date:	571/09
Reported to Client:	78	Date:	5/409

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4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: (218) 625-2337 Project:

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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EMRI78

EMSL Order:

EMSL Proj ID:

BNSF Libby, MT 2008

270900047

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0040	RR-00041		4/27/2009 1:45:00 PM

Comments:	-

ANALYZED:	WB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	مد	Date:	571/09
Sinucture Roview:		Date:	
Data Valiidation:	TP	Date:	57409
Reported to Client:	4-8	Date:	57 1/09

Microgreph Number	Type Offraction or Morphology

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Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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EMSL Order:

EMSL Proj ID:

270900047

EMRI78

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0041	RR-00042		4/27/2009 1:45:00 PM

ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Date Entry:	٥١	Date:	51409
Structure Review:		Date:	
Data Validation:	τP	Date:	57409
Reported to Citent:	7.0	Daie:	57,109

Micrograph Number	Type Diffraction or Morphology

4/24/2009 3:32:12 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

Phone: (218) 625-2332 D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

270900047

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0042	RR-00043		4/27/2009 1:45:00 PM

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ANALYZED:	1013	Date:	4/28/09
Preliminary Data Sent to Special Projects:	R Kun	Date:	4/30/09
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Sinucture Review:	***************************************	Date:	11
Data Validation:	TP	Date:	5/1/09
Reported to Chest:	TP	Date:	571/09

Microgreph Number	Type Cliffraction or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

**Duluth, MN 55802** 

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

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EMRI78

270900047

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0043	RR-00044		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	4/28/09	
Preliminary Data Sent to Special Projects:	R Ican	Date:	4/30/09	
Oata Entry:	عر	Date:	5/1/09	
Structure Review:		Oate:	1 1	
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4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

Cust COC ID

04/24/09 1:45 PM

EMRI78

270900047

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0044	RR-00045		4/27/2009 1:45:00 PM

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Comments:			
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ANALYZED:	KB	Date:	4/28/09
Preliminary Data Sent to Special Projects:	KKun	Date:	4/30/09
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Data Valildation:	78	Date:	571/09
Reported to Offent:	70	Date:	5/1/09

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

Project: D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

EMSL Proj ID:

270900047 BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0045	PR-00046		4/27/2009 1·45·00 PM

Comments:		 

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Date Entry:	.0.	Ostet	51109
Structure Review:		Date:	
Data Valildation:	TP	Date:	5/1/09
Reported to Chent:	TP	Date:	51109

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047 EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0046	RR-00047		4/27/2009 1:45:00 PM

	Comments:		
1			

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Oato Entry:	pe	Oste:	5/109
Structure Review:		Date:	
Data Valikdation:	70	Date:	5/1/09
Reported to Cheat:	TP	Dale:	57,109

, A	álomgraph Number	Type Orffrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591 Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0047	RR-00048		4/27/2009 1:45:00 PM

Comments:
Comments.

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data Entry:	.9	Date:	51/09
Sinucture Review:		Dets:	L (- /
Data Validation:	TP	Date:	5/1/09
Reported to Client:	78	Date:	5/1/09

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: EMSL Proj ID:

270900047

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0048	RR-00049		4/27/2009 1:45:00 PM

Comments:

ANALÝZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/20/09
Data Entry:	یان	Date:	571/09
Sinucture Review:		Date:	
Osta Validation:	TP	Date:	51109
Reported to Olient:	Τ-P	Date:	51,109

Micrograph Number	Type Oiffraction or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

270900047 BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0049	RR-00050		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	R Kun	Date:	4/30/09
Osta Entry:	<u>o</u>	Date:	5/1/09
Sinucture Reviews		Deta:	
Data Validation:	TP	Date:	571/09
Reported to Chest:	18	Daie:	51109

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

270900047 EMSL Order:

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0050	RR-00051		4/27/2009 1:45:00 PM

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Comments:		

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Osto Entry:	ei	Date:	5/109
Sinucture Review:		Date:	110
Osta Valiidation:	TP	Date:	5/1/09
Reported to Chent	J3	Daie:	51109

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	Micrograph Number	Type Cliffraction or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Order:

EMSL Proj ID:

Cust COC ID

Received:

04/24/09 1:45 PM

270900047

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0051	RR-00052		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKen	Date:	4/30/09
Data Entry:	oc	Date:	5/1/09
Sinuden Review:		Date:	
Data Validation:	TP	Date:	57409
Reported to Chast:	18	Daie:	51,109

Miorograph Number	Type Diffrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Order ID

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 Project: D2591

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

Cust COC ID

EMRI78

04/24/09 1:45 PM

270900047

BNSF Libby, MT 2008

Cust. Sample #	Location	Due Date	

Lab Sample # 270900047 4/27/2009 1:45:00 PM 270900047-0052 RR-00053

Comments:	<u>-</u>

ANALYZED:	ICB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Oata Entry:	or	Date:	57109
Simofure Review:		Date:	
Data Valiidation:	TP	Date:	571/09
Reported to Olivat:	79	Daie:	51109

Micmgreph Number	Type Offraction or Morphology
	~

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: D2591

(218) 625-2337

4, 4/13, 14, 15, 17, 21

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

Cust COC ID

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

04/24/09 1:45 PM

EMRI78

270900047 BNSF Libby, MT 2008

**Due Date** Order ID Lab Sample # Cust. Sample # Location 270900047 4/27/2009 1:45:00 PM 270900047-0053 RR-00054

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	Commonts.		
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ANALYZED:	UB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Date Entry:	a	Date:	4/30/09 5/1/09
Sinicture Review:		Dete:	
Data Validation:	AP	Date:	57409
Reported to Chent:	(T)	Dale:	57,109

Micrograph Number	Type Orffrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

EMSL Order:

Cust COC ID

EMRI78

04/24/09 1:45 PM

270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0054	RR-00055		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	ICB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Kkm	Date:	4/30/09
Data Estry:	ف	Date:	51109
Structure Review:		Date:	
Doin Vailidation:	AP.	Date:	5/1/09
Reported to Chent	78	Date:	51109

	Microgreph Number	Type Offrection or Morphology

4/24/2009 3:32:13 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMSL Order:

270900047 BNSF Libby, MT 2008

EMRI78

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0055	RR-00056		4/27/2009 1:45:00 PM

	Comments:
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ANALYZED:	ICB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	a.	Date:	5/1/09
Simul <b>ture Review</b> :		Date:	
Data Validation:	AP.	Date:	91/09
Reported to Citent:	TP	Date:	51109

Microgreph Number	Type
	Oiffraction or Morphology
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4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID:

Cust COC ID

270900047

04/24/09 1:45 PM

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0056	RR-00057		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	1CB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	R Kan	Date:	4/30/0 (
Data Entry:	OL	Oste:	5/1/09
Structure Review:		Date:	
Data Validation:	70	Date:	5/1/09
Reported to Client:	TP	Daie:	57109

Micrograph Number	Type Diffraction or Morehology

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

D2591 Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order: 270900047 EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0057	RR-00058		4/27/2009 1:45:00 PM

C
Comments:

ANALYZED:	VB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rken	Date:	4/30/09
Data Entry:	معد	Datet	571/09
Structure Review:		Date:	
Osto Velikation:	-1P	Date:	57409
Reported to Chent:	77	Date:	571/09

Microgreph Number	Type Offraction or Morphology
<u> </u>	

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0058	<b>RR-0005</b> 9		4/27/2009 1:45:00 PM

Comments:		

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Osta Entry:	er	Oste:	5/1/09
Structure Review:		Date:	
Osta Validation:	18	Date:	5/1/09
Reported to Chent:	TP	Date:	57,109

3 1		
	Micrograph Number	Type Orffrection or Morphology

4/24/2009 3:32:14 PM

Order ID: 270900047

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

EMSL Proj ID: Cust COC ID

270900047

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0059	RR-00060		4/27/2009 1:45:00 PM

Comments:	•

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Data <b>Satry:</b>	01	Osta:	51,69
Simot <b>on Review</b> :		Date:	67
Data Veliidation:	TP	Date:	571/09
Repor <b>ted to Chest:</b>	78	Daie:	5/1/09

Micrograph Number	Type Offraction or Morphology
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4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

EMSL Proj ID:

**Cust COC ID** 

270900047

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0060	RR-00061		4/27/2009 1:45:00 PM

Comments:	•	
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ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Deta Entry:	.ou	Date:	51109
Structure Review:		Dates	
Onto Vallidation:	TP	03:0:	571/09
Reported to Chant:	- <del>L</del> 8	Date:	5/1/09

Micrograph Number	Type Offrection or Morphology

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

270900047

EMRI78

04/24/09 1:45 PM

EMSL Order:

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0061	RR-00062		4/27/2009 1:45:00 PM

Comments:	•		
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ANALYZED:	KB	Date:	4 29 09
Preliminary Data Sent to Special Projects:	REIN	Date:	4/30/09
Dam Entry:	or	Date:	5/1/09
Simul <b>ium Roylaw</b>		Date:	i t
Osta V <b>eliidation:</b>	78	Date:	5/1/09
Repo <b>rted to Chest:</b>	<u>-</u> 8	Dates	57/09

Microgreph Number	Type Offrection or Morphology

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Comments:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

EMSL Order:

Cust COC ID

Received:

04/24/09 1:45 PM

270900047

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0062	RR-00201		4/27/2009 1:45:00 PM

Reported to Olient:

		Date:	710-110
Preliminary Data Sent to Special Projects:	RICM	Date:	4/30/09
Dam Entry:	Qe	Date:	57109

Morogreph Number	Type
 	Offraction or Morehology

78

Date:

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0063	RR-00202		4/27/2009 1:45:00 PM

C	Comments:		

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
Osta Entry:	چى	Date:	5/1/09
Structure Review:	عد.	Date:	17
Data Yalildation:	TEQ.	Date:	5/1/09
Reported to Chent:	PP	Date:	57 1/09

Micrograph Number	Type Orffrection or Morphology

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

270900047 EMSL Order:

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0064	RR-00203		4/27/2009 1:45:00 PM

Comments:	 	

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/09
Osto Entry:	90	Date:	571/09
Structure Review:		Date:	
Data Ya <b>liidation</b> :	TP	Date:	57409
Reported to Client:	TP	Dates	57109

Micrograph Number	Type Orfrection or Morphology

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0065	RR-00204		4/27/2009 1:45:00 PM

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ANALYZED:	WB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	4/30/04
Dam Estry:	٥ر	Date:	51109
Structure Review:		Date:	
Osta Valiidation:	78	Date:	5/1/09
Reported to Chent:	78	Date:	5/109

Microgreph Number	Type Orffraction or Morphology
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4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Duluth, MN 55802

(218) 625-2337 D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3, 4, 4/13, 14, 15, 17, 21

Suite 260

Phone: (218) 625-2332

EMSL Proj ID:

**Cust COC ID** 

EMSL Order:

Customer ID:

Received:

Customer PO:

EMRI78

04/24/09 1:45 PM

270900047

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0066	RR-00205		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	IUB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKm	Date:	4/30/09
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Sinucium Roviswo		Date:	
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Microgreph Number	Type Offrection or Morphology		

4/24/2009 3:32:14 PM

Order ID: 270900047

Attn:

Fax:

Project: D2591

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

4, 4/13, 14, 15, 17, 21

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900047

EMRI78

EMSL Order:

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0067	RR-00206	4	4/27/2009 1:45:00 PM

Comment	s:	

ANALYZED:	KB	Date:	4/29/09
Preliminary Data Sent to Special Projects:	RKM	Date:	4/30/09
Data Entry:	91	Date:	5/1/09
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Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

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EMRI78

270900047

EMSL Order:

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	270900047-0068	RR-00207		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	KB	Date:	4/29/09
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Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

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4, 4/13, 14, 15, 17, 21

Customer ID:

Phone: (218) 625-2332

Customer PO:

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EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	270900047-0069	RR-00208		4/27/2009 1:45:00 PM

Comments:	

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Preliminary Data Sent to Special Projects:	R.K.m	Date:	4/30/09
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Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: (218) 625-2337 Project:

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

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EMSL Order: 270900047

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	<b>270900047-0</b> 0 <b>7</b> 0	RR-00209		4/27/2009 1:45:00 PM

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	Micrograph Numb <b>er</b>	Type Offrection or Morphology

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Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

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EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust, Sample #	Location	Due Date
270900047	<b>2709</b> 000 <b>47-007</b> 1	RR-00210		4/27/2009 1:45:00 PM

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	Micrograph Number	Type Offrection or Morphology
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Order ID: 279900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

**Duluth, MN 558**02

(218) 625-2337

D2591

4, 4/13, 14, 15, 17, 21

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

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BNSF Libby, MT 2008

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900047	<b>27090</b> 004 <b>7-0</b> 072	RR-00211		4/27/2009 1:45:00 PM

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Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3, 4, 4/13, 14, 15, 17, 21

(218) 625-2337

Phone: (218) 625-2332

EMSL Order:

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BNSF Libby, MT 2008

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270900047	<b>270</b> 90004 <b>7-0</b> 073	RR-00212	. 40.	4/27/2009 1:45:00 PM

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Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

**Duluth, MN 5**5802

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 19/31, 11/3,

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270900047	<b>2709</b> 00047-0074	RR-00213		4/27/2009 1:45:00 PM

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Order ID: 270900047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

Phone: (218) 625-2332

4, 4/13, 14, 15, 17, 21

Customer ID:

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EMRI78

EMSL Order: 270900047

EMSL Proj ID:

BNSF Libby, MT 2008

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270900047	27090004 <b>7-0</b> 07 <b>5</b>	RR-00214		4/27/2009 1:45:00 PM

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# INTERNAL SANT SEE CHAIN OF CUSTODY

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Order ID: 270900047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth: 1N 55802

(218) 625-2337

Phone: (218) 625-2332

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/3,

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BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
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# NETERNAL CAME

### **CHAIN OF CUSTODY**

4/24/2000 3:32:15 PM

Order ID: 27000047

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, *1N 55802

Fax: Project:

(218) 6. 5-2337

Phone: (218) 625-2032 D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 40/24, 41/3, 4, 4/13, 14, 15, 17, 21

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EMSL Order: 270900047

BNSF Libby, MT 2008

Location **Due Date** 

Order ID Lab Sample # Cust. Sample # 270900047 271000047-00**77** 4/27/2009 1:45:00 PM RR-00216

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! 15crographs:

	Micrograph Number	Type Orfrection or Morphology
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# INTERNAL COLLEGE II CHAIN OF CUSTODY

4/24/2019 3:32:15 PM

Order 19: 27 1199047

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, 11N 55802 (218) 605-2337

Phone: (219) 625-2202

D2591 Project:

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10°C \( \), 11/3,

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Customer ID:

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270900047

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900047	EXC200047 <b>-0078</b>	RD-00047		4/27/2009 1:45:00 PM

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Order ID: 27000047

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, 11M 55802

(218) 625-00 T

Phone: (218) 625-2333

D2591

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, ±1/3,

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BNSF Libby, MT 2008

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Micrographs: Micrograph Number Type Diffraction or Morphology

#### STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### SDG NARRATIVE

Instructions: The following information should be included in all narratives. Please see the attached narrative template.

- 1 List the method or methods used.
- 2 For any modifications, reference the modification number and attach a copy of the signed document to the raw data package.
  3 If sample condition is not "OK", explain why and any implications to the data.



#### EMSL ANALYTICAL, INC.

www.emsl.com

Corporate Office & Lab 107 Haddon Avenue Westmont, NJ 08108 PH 800-220-3675 PH 856-858-4800 FAX 856-858-4766

June 22, 2009

Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802 Phone: 763-277-5200

RE: SDG Narrative – PLM Analysis by SRC-Libby-03, Revision 2

EMSL Analytical, Inc. Laboratory Order ID: 270900047

Dear Mr. Carney:

Seventy-Nine (79) samples were received in a sealed box on 4/24/09 and signed for by the sample-receiving clerk. These samples were assigned to an internal EMSL laboratory order ID number of 270900047, each sample was assigned a unique, sequential laboratory ID number, and the job was entered into the Laboratory Information System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL internal Chain of Custodies. Sample condition and signatures are recorded on Chain of Custody D2591as submitted by CDM Libby, MT.

These samples were analyzed in accordance with SRC-Libby-03, Revision 2 for the Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy, Visual Estimation Approach, with modifications described in Laboratory Modification document:.

Results were e-mailed to the Libby Distribution Group on 5/1/09. If you have any questions or require additional information, please do not hesitate to contact me at 856-858-4800, ext. 1253.

Sincerely,

EMSL Analytical, Inc.

Charles LaCerra

Special Projects Manager

#### STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### SAMPLE RESULTS

See Attached Sample Results

Instructions: These sample result forms are from the PLM (VE & PC) Data Sheet and EDD.xls file. They are labeled in this file as the VE or PC hard copy data form.

EMSL27_270900047 PLM VE.xls

Version : 7c

#### PLM VISUAL ESTIMATION DATA RECORDING SHEET

	Т		Т	T	Т	·	Sternomicroscopy	1			Γ			·												$\overline{}$
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EPA Index ID RR-00001	Char. FG	No.		270900047-000		Analyst Name K. Barnes	Sample Appearance homogeneous, non-fib	Qual	(%)	Bin	Qual	(%)	CROC, UNK)	Qual ND	(%)	Deviation?	Comments	Morph.	Color	(+!-)	(Y/N)	Water Street	a	Y	Biref. Optical C	Comments
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RR-00028	FG	1	Not QA	270900047-002	7 4/28/2009	K. Barnes	an,heterogeneous,fibro	ND	0	A	ND	ō		ND	0			5.21.1 3.2								
RR-00029 RR-00030	FG FG		Not QA Not QA	270900047-002	8 4/28/2009 9 4/28/2009	K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib		0	A	ND ND	0	<del> </del>	ND ND	0	-		distribution of them.		L			and the same			
RR-00031 RR-00032	FG FG	1	Not QA	270900047-003 270900047-003	0 4/28/2009	K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib	ND ND	0	A	ND	0		ND ND	0									***********		
RR-00033	FG	1	Not QA	270900047-003	2 4/28/2009	K. Barnes	,homogeneous, non-fib	ND	0	A	ND	Ö		ND	0											
RR-00034 RR-00035	FG			270900047-003		K Barnes K. Barnes	.homogeneous, non-fib .homogeneous, non-fib		0	A	ND ND	0		ND QN	0	l				ku anyan						
RR-00036 RR-00037	FG			270900047-003		K. Barnes K. Barnes	homogeneous, nan-fib homogeneous, non-fib		0	A	ND ND	0	ļ	ND ND	0	-			e Maritan and a	ļ				representation of the		
RR-00038	FG	1	Not QA	270900047-003	7 4/28/2009	K. Barnes	homogeneous, non-fib	ND	0	Α	ND	Ö	ļ	NO	Ö							artenantos († 1865) Artenantos († 1865)		on braining but		
RR-00039 RR-00040	FG	1	Not QA	270900047-003 270900047-003	9 4/28/2009	K. Barnes K. Barnes	k,homogeneous-non-fit y.homogeneous.non-fit	ND	0	A	ND ND	0		ND ND	0											
RR-00041 RR-00042	FG	1	Not QA	270900047-004	0 4/28/2009 1 4/28/2009	K. Barnes K. Barnes	k,homogeneous-non-fit y,homogeneous,non-fit	ND	0	A	ND ND	0		ND ND	0								un transcr			4
RR-00043 RR-00044	FG	1	Not QA	270900047-004	2 4/28/2009	K. Barnes K. Barnes	y.homogeneous,non-fib	ND ND	0	A	ND ON	0		ND ND	0		***************************************									
RR-00045	FG	1	Not QA	270900047-004	4 4/28/2009	K. Barnes	y,hamogeneous,non-fib m,hamogeneous,non-fi	ND	0	A	ND	0		ND	0											
RR-00046 RR-00047	FG			270900047-004		K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib		0	A	ND ND	0	<del> </del>	ND	0	-	****************		<b>b</b>							
RR-00048 RR-00049	FG FG	1	Not QA	270900047-004	7 4/29/2009	K. Barnes	homogeneous, non-fib homogeneous, non-fib	ND	0	A	ND ND	0		ND ND	0								*****			
RR-00050	FG		Not QA	270900047-004 270900047-004	9 4/29/2009	K. Barnes K. Barnes	,homogeneous, non-fib	ND	0	A	ND	Ö		ND	Ö											
RR-00051 RR-00052	FG			270900047-005	0 4/29/2009	K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib	ND ND	0	A	ND ND	0	+	ND ND	0			2						22-03-02-0-		
RR-00053 RR-00054	FG	1	Not QA	270900047-005	2 4/29/2009	K. Barnes K. Barnes	homogeneous, non-fib	ND	0	A	ND ND	0		ND ND	0			200 m			4					
RR-00055	FĢ	1	Not QA	270900047-005	4 4/29/2009	K, Barnes	homogeneous, non-fib homogeneous, non-fib	ND	0	A	ND	0		ND	0			Sangil agency.		prime gradi	La lana i i i i i i					
RR-00056 RR-00057	FG	1	Not QA	270900047-005	6 4/29/2009	K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib	ND	0	A	ND	0	<del> </del>	ND ND	0	<del> </del>		200				nanasail.			and the same	
RR-00058 RR-00059	FG		Not QA	270900047-005 270900047-005	7 4/29/2009	K. Barnes K. Barnes	homogeneous, non-fib		0	A	ND ND	0	<del></del>	ND ON	0				gamanı, ir re							
RR-00060	FG	1	Not QA	270900047-005	8 4/20/2009	K. Barnes	homogeneous, non-fib	ND	0	A	ND	0		ND	Ů.						armore i					
RR-00061 RR-00062	FG	1	Not QA	270900047-006 270900047-006	1 4/29/2009	K. Barnes K. Barnes	homogeneous, non-fib homogeneous, non-fib	ND ND	0	A	ND ND	0		ND ND	0				Î.,		40.0					
RR-00201 RR-00202	FG	1	Not QA	270900047-006 270900047-006	2 4/29/2009	K. Barnes K. Barnes	e,homogeneous,non-fil e,homogeneous,non-fil	ND ND	0	A	ND ND	0		ND ND	0											
RR-00203	FG	1	Not QA	270900047-006	4 4/29/2009	K. Barnes	,homogeneous, non-fib	ND	Ö	Α	ND	0		ND	0		*****							Service of the		
RR-00204 RR-00205	FG	. 1	Not QA	270900047-006	6 4/29/2009	K. Barnes K. Barnes	fil-non, sucenegomon, e fil-non, sucenegomon, e	ND	0	A	ND ND	0	<del></del>	ND ON	0	<del> </del>				han bia		***********	aaramani k			
RR-00206 RR-00207	FG	1		270900047-006		K. Barnes K. Barnes	homogeneous, non-fib e,homogeneous,non-fit	ND ND	0	A	ND ND	0		ND ND	0											
RR-00208	FG		Not QA	270900047-006	9 4/29/2009	K. Barnes	e,homogeneous,non-fil	ND	0	A	ND	o o		ND	0			graph was a series	Sean and and address of					- 0- V	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
RR-00209 RR-00210		1	Not QA	270900047-007 270900047-007	1 4/30/2009	K. Barnes K. Barnes	homogeneous, non-fib e,homogeneous,non-fil	ND ND	0	A	ND ND	0		ND ND	0					2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	والمستندوا		nergioeni k	and the same of		
RR-00211				270900047-007		K. Barnes	e,homogeneous.non-fil	ND	0	A	ND	0		ND	0		L							1,000		

FILE NAME: EMSL27 270800047 PLM VE xis

Version: 7c

#### PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name

Job Number

Date Received

SOP Name/Revision

Spreadsheet version

7c. | |

Data Entry by: [L. Ramowski Data Entry Date: 5/1/2008 QC Check by: [T. Peters QC Check Date: 5/1/2009

							Stereomicroscopy Examination	Libby	Amphibo	lo (LA)	۰	ther Amp	ilbole (OA)	Chryse	otile (Ch)				ОРП	CAL PRO	PERTIES	FOR LA	see key f	or data entr	/ (nputs)	
EPA Index ID		Suffix	QA Type (NOT QA, LOS, LOC)		Date Analyzed	Analyst Name	Sample Appearance	Qual	LA-MF (%)	Bin	Qual	OA-AF (%)	OA Type (AMOS, ANTH, CROC, UNK)	Quai	Ch-AF	Deviation?	Comments	Morph.	Fiber Color	Sign Elong. (+/-)	Pleach. (Y/N)	Extinct. Angle	Ref. Index a	Ref. Index ¥ 8	ref. Optical 0	Comments
RR-00212	FG	1		270900047-0073		K, Barnes	.hamageneous, non-fib	ND	0	A	ND	0		ND	0	T		CONTRACT		la so so	A CONTRACTOR		e			
RR-00213	FG	1	Not QA	270900047-0074	4/30/2009	K. Barnes	e,homogeneous,non-fit	ND	0	A	ND	Û		ND	0											200
RR-00214	FG	1	Not QA	270900047-0075	4/30/2009	K. Barnes	a,homogeneous,non-fit	NO	0	A	ND	0		ND	0	I		Ann and a column			*	Salara Barra				
RR-00215	FG	1	Not QA	270900047-0076	4/30/2009	K. Barnes	homogeneous, non-fib	ND .	0	A	ND	0		ND	0	I			A har a bankinin ana	American solution			and the solution		and the same of the same of	
RR-00216	FG	1	Not QA	270900047-0077	4/30/2009	K. Barnes	e,homogeneous,non-fit	ND	0	A.	ND	0		ND	0	1			a contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of	Service better 121		Participanian and a second		en all a religion		
RR-00217	FG	1	Not QA	270900047-0078	4/30/2009	K. Bernes	e,homogeneous,non-fit	_ND	ū	A	ND	0		ND	0			Total Control	dia and	a againment of						
RR-00218	FG	1	Not QA	270900047-0079	4/30/2009	K. Barnes	homogeneous, non-fib	ND	0	A	ND	0		ND	0			3000000								

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#### STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### BENCH SHEETS

Instructions: Please provide handwritten or LIMS system generated raw data sheets for sample results.

# PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name EMSL27

Job Number 270900047

Date Received 4/24/2009

SOP Name/Revision SRC-Libby-03 Rev 3 4/30/

	Index	Index	QA Type	·			Stereo	microsco	opy Examina	tion		Libby Amphibole		Other Amphibole			
EPA Index ID	Suffix Char.	Suffix	(NOT QA, LDS, LDC)	Lab Sample ID	Date Analyzed	Analyst Name	Sample Appearance	Esi Qual	t. % LA		OA and C	Qual (ND, Tr,	Mass Fract	Qual	Area Fract	OA Type (AMOS, ANTH,	
	Onar.	140.	250, 250)				, ,,	(ND, Tr,	Mass Fract (%)	Qual (ND, <)	Area Fract (%)	<)	(%)	(ND, <)	(%)	CROC, UNK)	
RR-00001	FG	1	NOTOA	270900047-	4/27/09	KBarnes	Tan, homogeneous 1904-fibrous	ND	0	ND	Ø	ND	0	ND	0		
RR-00002	FG	(	NOTOA	-0002	4/27/09	Claines	Tan, honogeneous non-fibrous	ND	0	QU CIN	0	こり	O	an	0		
RR-00003	Fa	1	NOTOA	-0003	4/27/09	Warnes	Tan, homogeneous non-fibrous	ND	0	20	0	ND	O	ND	0		
RR-00004	FO	1	ROTON	-0004	4/27/09	Warner	Tan, hornogeness Non-fibrous	ろう	0	ND	0	OU	0	CLN	0		
RR-00005	Fa	1	NOTQA	-0005	4/27/09	Clanes		ND	D	QN	0	CTU	0	CIN	٥		
RR-00006	FG	1	MOTOA	-0004	4/27/09	Klarnes	Tan, homogeneous	ND	0	ND	0	ND	0_	MD	0		
RR-00007	Fa	1	NOTOH	-0007	4127109	Kleamer	Tani hornogeneus	DU	0	QQ	0	ND	0	ND	0		
RR-00008	Fa	1	NOTOA		4/27/09	Chaines	Tan, homogeneous non-fibrous	ND	0	an	0	ND	0	ND	0		
RR-00009	FG		NOTQA	-0009	4/27/09	Keane	Tan, nomogunous non-filarous	ND	0	ND	0	ND	0	ND	0		
RR-00010	F6	1	MOTOA		4/27/09	Klames	Tan, nomogeneous	ND	O HEALE	QN	0	ND	0	ND	0		
RR-00011	F67	1	NOTOA	-0011	4/27/09	Klearnes?	Tan, homogeneous non-fibrous	ND	AFOO	ND	0	DN	٥	CU	٥		
RR-00012	FGI	1_	NOTOA	-0012	4/27/09	Warnes	Tan, no mogereas	ND	0	GN	0	CIN	0_	CIN	0		
RR-00013	FG	1	NOTOA	-0013	4/27/09	Clamer	Taninomogeneous non-fibrious	S	O	ND	0	ND	0	ND	δ		
RR-00014	FG	1_	NOTOA	-0014	4/27/09	Warnes	Tani nomogeneus non-fibrous	NV	0	JU	0	ND	٥	CIN	D		
RR-00015	F6		HOTOH	-0015	4/27/09	Klearnes	Tan, homogeneous non-subcrous	ND	0	GU	0	NO	0	ND	0		
RR-00016	Fa	1	NOTRA	-0016	4127109	Klearnes	Tan, homogeneous	ho	0	DC	0	ND	0	ろり	0		
RR-00017	FG	1_	ADTON	-0017	4/27/09	Kearner	Tan, no mogenea non-fibrous	ND	0	ND	0	ND	0	ND	0		
RR-00018	Fa	١	ASTON	-0018	4/27/09	Warnes	Tan, homogeneous	NI	0	ND	0	CTY	0	CIN	0		
RR-00019	Fa	1	NOTOA	-0019	4124/09	Wearnes	Tan, homogeneous non-francus	NU	0	ND	٥	ND	0	S	0		
RR-00020	Fa	1	Notor	-0020	4/27/09	Wearnes	Tan, horrogenaus non-filorous	ND	D	ND	0	ND	0	ND	8		
RR-00021	Fa	1	NOTOA	-0021	11011	Klearnes	Tan, komogeneous non-fibrous	UD	0	DU	Ò	ND	0	CTU	٥		
RR-00022	Fa	l	NOTOA	-0022	4/28/09	Wearres	Tan, homogenous non-fibrous	TR	0.1	ND	D	TR	0.1	ND	0		

### Note: Data Recording Sheet is formatted to print on 11x17 paper.

:					OPTICAL PROPERTIES FOR LA											
	Chrysotile			Comments	(see key for appropriate data inputs)											
	Qual (ND, <)	Area Fract (%)	Deviation?	(list below)	Morph.	Fiber Color	Sign Elong. (+/-)	Pleoch. (Y/N)	Angle Extinct.	Ref. Index a	Ref. Index Y	Biref.				
RR-00001	ND	0														
RR-00002	ND	0														
RR-00003	ND	٥														
RR-00004	ND	٥														
RR-00005	ND	٥				_										
RR-00006	DN	٥														
RR-00007	ND	0				_										
RR. 00008	ND	0														
RR-00009	ND	0														
RR-000010	ND	0														
RRØDODII	ND	0								-						
RR-00012	ND	0														
RR-00013	ND	0														
RR-00014	NP	٥														
RR-00015	ND	٥			·											
RRODDIA	ND	0								•						
RR-00017	ND	0														
RR-00018	ND	0				_										
RR-00019	D	٥														
RR-00020	ND	0														
RR-00021	NTO	٥														
RR-00022	ND	0			ST	C	+	2	0	1.625	1.633	<u>L</u> .				

### PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name EMSL27

Date Received 4/24/2009

SOP Name/Revision SRC-Libby-03 Rev. 7 4 30

Job Number 270900047

						Analyst Name	Stereomicroscopy Examination					Libby A	Libby Amphibole		Other Amphibole		
	Index Suffix	Index Suffix	QA Type (NOT QA,	Lab Sample ID	Date Analyzed		Sample Appearance	Est. % LA		Est. % OA and C		Qual	Mass Fract	Qual	Area Fract	OA Type	
	Char.	No.	LDS, LDC)					Qual (ND, Tr, <)	Mass Fract (%)	Qual (ND, <)	Area Fract (%)	(ND, Tr, <)	(%)	(ND, <)	(%)	(AMOS, ANTH, CROC, UNK)	
RR-00023	F6	l	NOTOA	-0023	4/28/09	KBarnes	Tan, homogeneous	ND	0	ND	0	ND	٥	20	0		
PR-00025	FG	(	NOTOA		4/28/09	Wanis	Tarinomogeness	TR	0.1	UD	0	TR	0.1	QU	٥	3,000	
RR-00026	FE	l	NOTON		4/28/09	Kearnes	ran, homogeneous	<u>5</u> 2	0	ND	0	DU	٥	ND	0		
RR-00027	F6	1	NOTOA	-0026	4/28/09	Wearnes	Tan, homogeneous non-fibrous	ND	0	ND	0	ND	0	DN	٥		
RR-00028	FE	1	POPOR	-0027	4/28/09	KBarner	Tan, heterogenuus fibrous	NV	O	ND	0	ND	٥	S	0		
RR-00029	FG	(	NOTOR	-0028	4/28/09	Klainer	ran, homogeneous	S	0	S	0	ろり	0	CTU	0	33000	
RR-00030	FG	1	NOTOA	-0029	4/28/09	Warner	Tan, homogeneous non-filorous	ND	O	ND	0	ろり	0	ND	0		
13.7.	FG	1	HOTOH	-0030	4/28/09	Warner	non-fibrous		O	ND	0	STO	0	UD	0		
RR-00032		<del> </del>	NOTOA	-0031	4/28/09		Tan-homogeness	CU	0	CZN	0	SU	٥		0		
RR-00033		<b></b>	HOTOR	-0032	4/28/09	Krame	Tan, homogareous	ND	0	ロス	0	ND	O	S	D		
RR-00034		<del> </del>	HOTOR	-0033	4/28/09	KBarnes	Tan, homogeneous	CTU	0	ND	٥	S	0	ゆる	0		
RR-00035		1	NOTOR	-0034	4/28/09	Klarnes	non-fibrous	ND	0	ND	0	ND	0	ND	0		
RR-00036			HOTON	-0035	4128/09	Charnes	Tan, homoganis	NI	,O	CC	0	ND	O	S	0		
RR-00037			NOTOA	-0036	4/28/09	Jobarnes	Taninomaganeous	NU	0	ND	0	ND	0	ND	0		
RR-00038			NOTEDIA	-0037	4/28/09	Charres	Tan, normograms non-fibrous Black, nontibrous	ND	0	S	0	ND	0	ND	0	330000000	
RR-00039			NOTOR	-0038	4/28/09	Clames-	homogeneous	ND	D	ND	0	ND	0	S	δ		
RR-00040			400ton	-0039	4/28/09	Klearne	gray, Kornageneus Non-filorous black, homogeneous	NP	6	ND	0	ND	0	ND	0		
			NOTOH	-0040	4/28/09	100mis	non-fibrous gray, homogeneous	ND	٥	ND	0	ND	٥	2D	0		
RR-00042			HOPEL	-0041	4/28/09	Kearnes-	gray, nomogeneous	NU	0	ND	٥	UD	0	ND	Ò		
RR-00043		1	NARDA	-0042		Wearnes	non-fibrous gray, nomogeness	ND	0	UD	0	ND	0	ND	0		
RR-00044	194	-	AOTEN	-0043	4/28/09	Klames	Take to E. Marier and	1 1 1 1 /	0	ND	0	ND	0	ND	0		
RR-00045	F6	1	NOTOR	-0044	4/28/09	Klane	non-Albrous Non-Albrous	PND	0	ND	0	ND	0	ND	0		

#### Note: Data Recording Sheet is formatted to print on 11x17 paper.

	Chr	rectile				***************************************						
	Chrysotile		Deviation?	Comments			(see key	AL PROP		a inputs)		
	Qual (ND, <)	Area Fract (%)	(list be	(list below)	Morph.	Fiber Color	Sign Elong. (+/-)	Pleoch. (Y/N)	Angle Extinct.	Ref. Index a	Ref. Index Y	Biref.
RR-00023	ND	0										
RR-00025	ND	0			ST	C	+_	7	0	1.626	1.631	<u></u>
RR-00026	ND	0										
RR-00027	ND	٥_										
RR-00028	ND	0										
RR-00029	CIN	٥										
12R-00030	ND	0										
RR-00031	ND	0										
RR-000 32	ND	0		,								
RR-00033	ND	0_								•		
12R-00034	NO	0										
RR-00035	ND	0										
RR-00036	ND	0										
12R-00037	NP	0										
122-000 38	ND	٥									-	
RR-00039	ND	٥										
155-000AD	ND	0										
14 000-2151	ND	٥										
PR-00042	ND	0										
PR-00043	ND	0										
12R-01044	ムマ	0									_	
PR-00545	ND	O										

# PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name EMSL27 Job Number 270900047

Date Received 4/24/2009

SOP Name/Revision SRC-Libby-03 Rev 4 4306

	Index	Index	QA Type				Stereomicroscopy Examination					Libby Amphibole		Other Amphibole		
EPA Index ID	Suffix Char.	Suffix No.	(NOT QA, LDS, LDC)	Lab Sample ID	Date Analyzed	Analyst Name	Sample Appearance	Qual	% LA Mass Fract	Est. %	OA and C Area Fract	Qual (ND, Tr.	Mass Fract	Qual	Area Fract	OA Type (AMOS, ANTH, CROC, UNK)
								(ND, Tr, <)	(%)	(ND, <)	(%)	<)	(%)	(ND, <)	(%)	CROC, UNK)
PR-00046	FG	1	NOTOR	-0045	4/29/09	KBarnes	2 (O) 1- 11-0- D 0- O	ND	0	<b>2</b> D	٥	ND	0	20	0	
PR-00047	FEI	1	NOTOA	-0046	4/29/09	Clarnes	Tan, homogeneous non-filorous	ND	0	ND	٥	ND	0	CU	0	
RR-00048	F61	١	Haton	-0047		Charner	Tan, homogoneous	20	O	OO	Q	S	U	an	0	
RR-00049	F6	١	MOTON			Wearns	Tan, homogeneous non-fibrous	ND	0	ND	٥	ND	Q	70	0	
RR-00050	FG	(	NOTON	-0049	4/29/19		Tanihomogeneous non-fibrous	ND	٥	ND	0	120	Ò	GU	0	
RR-00051	FG	1	Notor	-0050	4/29/09	Kleamer	Tari, homogeneous	DU	O	S	0	ND	0	CIN	Ò	
RR-00052	FG	١	HOYOA	-0051	4/29/09	Juen	Tan homogeneous non-fuorous	ND	0	GU	0	27	0	ND	ð	
RR-00053	FG	l	NOTOA	-0052	4/29/09	Lleame	tan, homogeneous	ND	0	ND	٥	ムび	0	20	δ	
RR-00054	4	١	NOTOA	-0053	4/29/09	Warner	Tanihomogeneous non-fibrous	100	D	SD	0	Da	0	2	Ö	
RR-00055	FG	(	NOTOA	-0054	4/29/09	Warnes	Tan, normageneous non-fibrious	ND	0	UD	0	DU	D	Q C	٥	
RR-00056	FG	1	AUTUN	-0055	4/29/09	Cleans	Tan, no mogeneous	ND	0	ND	0	ムロ	0	<u>D</u>	0	
RR-00057	Fo	١	MOTOR	-0056	4/29/09	Klearner-	ran, homogeneous	ND	0	ND	0	7	0	CIC	O	
RR-00058	F61	1	NOTOA	-0057	4/29/09	Wenner	Tanihomogeneous	GN	0	ND	۵	DU	0	ND	0	
RR-00059	FG	1	NOTOH	-0058	4/29/09	Learns	Tan, no mogeneous	M	0	ND	0	ND	0	ND	0	
RR-00060	FG	(	HOTON	-0059	4/29/09	Learner	Tan, nomogeneous	ND	D	ND	٥	ND	0	UN	0	
RR-00061	FE	١	<b>FKDton</b>	-0060		Kleanes	Tan, nomogeneous	ND	0	ND	0	ST	٥	ND	0	
RR-00062	FH	1	MOTOM	-006(	4/29/09		Tan i homogeneous	ND	ß	ND	0	らり	0	ND	0	
RR-00201	F61	1	NOTOH	-0062	4/29/09	Kearnes	white, homogrape non-fibrous	NV	0	ND	0	ND	0	ND	0	
RR-00202	FG	1	NOTOA	-0063	4/29/09	Wennes	white, non-florous	NV	0	ND	ð	ND	0	ND	٥	
PR-00203	FG	1	NOT DIA	-0064	4/29/09	Kearne	tan, Fromogeneous		0	ND	0	ND	O	ND	0	
RR-00204	FG	1	40tou	-0065	4/29/09	Wenner	whiteinon-fibrous nomogeneous	NV	0	ND	0	ND	٥	da	0	
PR-00205	FU	1	MOTOR	-0006	4/29/09	Wearner	white, non-fibrous	ND	0	ND	0	ND	D	ND	0_	

#### Note: Data Recording Sheet is formatted to print on 11x17 paper.

	Chr	ysotile							ERTIES FO			
	Quai (ND, <)	Area Fract (%)	Deviation?	Comments (list below)	Morph.	Fiber Color	Sign Elong. (+/-)	Pleoch. (Y/N)	Angle Extinct.	Ref. Index a	Ref. Index Y	Biref.
RR-00046	ND	٥										
RR-00047	ND	٥										
RR-00048	ND	٥										
RR-00049	ND	٥										
1212-00050	ND	D										
RR-00051	ND	0										
RR-00052	ND	٥										
128-00053	ND	0										
RR-00054	ND	0										
12R-00055	ND	0										
RR-1000 54	ND	٥										
22-00057	ND	V										
RR-00058	ND	O										
RR 00059		٥										
PR-00060	ND	٥										
PR-000 61	ND	0										
PR-000 02	ND	Ď										
RR-00201	i	0										
PR-00202	ND	٥										
RR-00203	ND	D										
RR-00204	ND	0	3									
RR-00205	ND	8										

#### PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name	EMSL27
Job Number	270900047

Date Received 4/24/2009

SOP Name/Revision SRC-Libby-03 Rev. 7 4/30/1

Stereomicroscopy Examination Libby Amphibole Other Amphibole QA Type Index Index Est. % LA Est. % OA and C EPA Index ID Suffix (NOT QA Lab Sample (D Qual Suffix Date Analyzed Analyst Name OA Type Mass Fract Qual Area Fract Qual LDS. LDC) (AMOS, ANTH, No. Sample Appearance (ND, Tr Mass Fract Qual Area Fract (ND, <) (ND. Tr. (%) (%) CROC. UNK) <) (%) (ND, <)(%) Tari, nomageneas RR-00206 FG F2000-4/29/09 NOTOP KBarnes ND ND ND 0 ND 0 0  $\bigcirc$ non-fibrous white, non-fibrous RR-00207 FG **UD** -0068 4/29/09 NOTOA Barnes DD Ò 0 0 ND 0 homoaeneous white non-fibrous -0069 RR-00208 F6 4/29/09 ND 0 ND ND NOTOA KRame 0 ND 0 0 homoneneous non-fibrous RR-00209 FG (Barnes ND MOTOR -0070 ND 0 ND 0 OGU 0 white, homogeneous RR-00210 F6 NOTON 1700-4/30/09 Warnes ND D ND ND GN  $\bigcirc$ 0 0 non-fibrous white, hamogeners RR-00211 ND -0072 4/30/09 KBarnes ND DD HOYON ND D δ 0 0 non-florous ran, homogeneous ND RR-00212 FG -0073 4/30/09 ADYON ND KBarnes 0 ND Ò ND 0 0 white, homogeneus RR-00213 FG -0074 ND 0 MOTOR ND CU KBarnes 0 ND 0 0 non-fibrous white, homogonany RR-00214 Fb NOTOA -0075 ND ND ND 4/30/09 ND 0 Ø Barnes 0 0 Tan, nomogenesis RR-00215 FG NOYOH -0076 ND ND 0 Klarnes ND ۵ 0 () non-fromous RR-00216 FG white, homeyeners NOTOA -0077 4/30/09 CBarnes ND ND ND Ò 0 non-fibrous 0 0 non-fibrous ND RR-00217 PG -0078 MOTON DO ND 0 0 LBarres Û ND 0 Tan, nornogeneous ND NOTOA -0079 RR-00218 FG MD KRAMOS ND 0 ND 0 0 <del>-</del>-...

#### Note: Data Recording Sheet is formatted to print on 11x17 paper.

	Chr	ysotile				~			ERTIES FO			
	Qual (ND, <)	Area Fract	Deviation?	Comments (list below)	Morph.	Fiber Color	Sign Elong. (+/-)	Pleoch. (Y/N)	Angle Extinct.	Ref. Index a	Ref. Index Y	Biref.
RR-00206	ND	٥		·								
R-00 207	ND	0										
RR-00 208	ND	0										
RR-00209	ND	0										
RR-00210	ND	0										
RR-00211	ND	٥										
RR-00212	ND	0										
RR-00-213	ND	0										
RR-00214	ND	Ò										
RR-00215	ND	0										
RR-00216	ND	0										
RR-00217	ND	٥										
RR-00218	ND	0										
	Orthodox September 1											
					Kr. 4/3	<i>G</i> -						
					4/3	OFFE	, 2					
						109						
									-			
										Same and	\	

PLMVE	: SK	2C-LIE	BBY ·	)3,R	?EV.XZ	-
A TORON AMAIYSIS UF DUIN IV.	apertury VISTS	7 000/1C-75/110	wienned using	I omitized E	Ent UD/4124109	

	T. J.		
Client:	Logged:	TAT:	<b>(56</b>
Address:	Date/Time Due:		
Fax: Project:	Special Instruc	tions	Order Number 270900047

-			Γ			COMPON	ENT TY	PES				MICRO	OSCOPIC		
Macros	copic	Tre	atment	Asbesto	os	Fibr	ous	I	Non-Fib	rous		Optical	Properties		
TEXTURE (	n 4 White 7 Black 5 Red 8 Silver 6 Various 9 Blue 10 Yellow TEXTURE (T) us 2 Non-Fibrous 3 Other		ushed 2 ssolve 3 hed 4 ated 5	6 Crocidolite		11 Other		15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl	14 Quartz 15 Mica 16 Gypsum 17 Cal. Carbonate 18 Matrix 19 Perlite 20 Other		1. Wavy 2. Straight 3. Uniform Diam 4. Ribbon-Like 5. Tapend Ends Pleochroism (P) 1. Yes 2. No	dorphology (M) 6. Scaled 7. Pitted eter 8. Medulla 9. Exotic: 10. Other 1 Low: 0.010 2 Med 0.010-0.050 3 High > 0.050	B) Fiber Color (FC)  White  B Bruwn  B Beise	Extinction (S)  Extinction (E) 1. Parallel 2. Symmetrical 3. Oblique 4. Undulose	
HOMOGENEIT 1 Homogeneous 3 2 Heterogeneous 4	Y (H) OTHER Lavers (#)		Stereo Asbestos Est. %	Asbestos Type	% of Asbesto	Fil	other brous		Fibrous	Non-Asb Char.			5 Green 6 Colorless	- Value	
Sample	Macrosc. T	reat		CIN	0	s Type	<u>%</u> 	Type 20	100	Ex. E4	ļ	Optical R.i.	Properties	JI R.L.	
RR-00001	(1) 2		0	1012				20	100			М		S	
	(H)	- 1	-								P	В	(FC)	Е	
	(C) 3			ND	0	3.7.		20	100			⊥ R.I.		[] R.I.	
RR-00002	m 2 1		0									М		S	
	(H) (										P	В	(FC)	Е	
	(C) 3			ND	0		-	20	100			⊥_ R.I.		R.I.	
RR-00003	(T) 2	1	$\delta$									М		S	
	(H) [			×							P	В	(FC)	E	
	(C) 3				ND	0			20	100			⊥ R.I.		R.L
2R-00004 17 2 1	O	,	c.							М		S			
	(H)	)									P	В	(FC)	E	
	(C) 3			ND	$\cup$	-	-	- 20	100			⊥ R.I.		R.I.	
RR-00005	(T) Z	l	0									М		S	
	(H)										P	В	(FC)	E	
	(C) 3			ND	0	NAME OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNE		20	NOO			⊥ R.I.		R.J.	
RR-00004	(T) 2,	1	0						· ·			М		S	
	(H) (	٠ ا	•								P	В	(FC)	Е	
	(C) 3		:	ND	0	~	Company of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the las	20	100			⊥ R.i.		R.I.	
RR-00007	(T) Z		0									М		S	
	(H) (	·	-								P	В	(FC)	Е	
	(C) 3			ND	0	· Commence	-	20	100			⊥ R.I.		R.I.	
RR-00008	(T) 2	t	6									М		S	
	(H)			,							P	В	(FC)	E	
	(c) 3			ND	()	Name and Address of the Owner, where		20	100			⊥ R.I.		R.I.	
RR-00009	m 2	,	O									М		S	
,	(H)										P	В	(FC)	E	
	(C) 3			ND	O	*		20	100			⊥ R.I.	'	R.I.	
RR-00010	(T) <b>2</b>	1	0									М		S	
	(H) \	1									P	В	(FC)	E	

Analyst: KBanne	_ Date:	4/27/09	Computer:		Date:	
Room Temp (C): 18.3		·	MSL Analytical,	inc.		PLM7.9.0

E: SRC-LIBBY-0 Rev. 2 VB 4/30/09

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Address:

Date/Time Due:

Fax:

Project:

Special Instructions

Order Number

270900047

					(	OMPON	ENT TY	PES				MICRO	SCOPIC	
Macroscop	oic	Treatm		Asbesto	s	Fibr		1	Non-Fib	rous			Properties	
COLOR (C)  1 Brown 4 White  2 Gray 5 Red  3 Tan 6 Various  TEXTURE (T)  1 Fibrous 2 Non-Fibro	7 Black 8 Silver 9 Blue 10 Yellow	1 Teased 2 Crushe 3 Dissol 4 Ashed 5 Heated 6 Melted	ed 2 / ve 3 / 4 1	Chrysotile Amosite Anthophyllit Fremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synther 11 Other 12 Wollass 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	2. Straight 3. Uniform Diament 4. Ribbon-Like 5. Taperod Ends Pleochroism (*) 1. Yes 2. No	aphology (M) 6. Scaled 7. Pitted er 8. Medulla 9. Exotic S 10. Other Birchingenece ( 1. Low: 0.010 1. Med 0.010-0.050 High >0.050 1. None 0.00 or Loo	i. + 2 3. Variable B) Fiber Color (FO 1 White 2 Brown 3 Beige	Elempation (S)  Elempation (C)  Parallel  Symmetrical  Oblique  Undulose
HOMOGENEITY ( 1 Homogeneous 3 OT	(H) 'HER	As	tereo bestos	Asbestos	% of	Fit	ther crous	Non-l	ibrous	Non-Asb Char.			5 Green 6 Colorica	9077
Sample M		reat	st. %	Туре	Asbesto	Type	%	Туре	%	Ex. E4			Properties	3
RR-00011 (T		, 1 (	0	ND	0			20	100			⊥ R.I,		II R.I.
(H		'   '				<del>-</del>					P	В	(FC)	E
(C				GN	0	diameter.		20	100	·	-	⊥ R.I.		ĮĮ R.I.
RR-00012 1		1   (	0									М		S
(H											P	В	(FC)	E
(C				ND	0	<u> </u>		20	100			⊥ R.I.		R.L
RR-00013 1		1 0	<b>&gt;</b>						·			М		8
(H											P		(FC)	E
(0	- 1			ND	0	-		20	100			⊥ R.I.		R.I.
RR-00014 1			>								P	M B	(FC)	S E
(C	) 3			ND	Ó	-		20	100			⊥ R.I.		R.I.
RR-00015 1		,   ,	0	147		1			100			М		S
(H	) (	`   `									P	В	(FC)	Е
C	3			ND	0			20	100			⊥ R.I.		R.I.
RR-00016 1	2	(	0		-							M		s
(H	) [										P	В	(FC)	E
(C	3			ND	0	-	-	20	100			⊥ R.I.		R.L
RR-00017 1			0									. М		S
(н	) (										P		(FC)	E
C	-			ND	0	-		20	100			⊥ R.i.		R.I.
RR-00018 1	-,	1	0	·								М		S
1/4	) (										P	В	(FC)	E
(C	3 2			ND	0	<u> </u>		20	100			⊥ R.I.		R.I.
RR-00019 1	) Z	( )	0									М		S
(n					,						P		(FC)	E
	) 3			ND	0		-	20	100			⊥ R.I.		R.I.
	) 2	(	0									М		s
(H	) (										P	В	(FC)	E

Analyst: KBowyes	Date:	4/27/09	Computer:		Date:	
Room Temp (C): 20-4		· (	MSL Analytical.	Inc.		PLM7.9.0

# VE: SRC-LIBBY.0

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u	не	211	ι.

Logged:

TAT:



Address:

Fax: Project: Date/Time Due:

Special Instructions

Order Number

			Γ		C	OMPON	ENT TY	PES			Γ	MICRO	OSCOPIC	
Macros	copic	Treat	tment	Asbesto	os	Fibr			Non-Fib	rous			Propertie	s
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou TEXTURE ( 1 Fibrous 2 Non-Fi	7 Black 6 Silver s 9 Blue 10 Yellow	1 Teas 2 Crus 3 Diss 4 Ashe 5 Heat 6 Melt	hed 2 A olve 3 A d 4 T ed 5 A	hrysotile mosite anthophyllit remolite actinolite rocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix .ite	te	2. Straight 3. Uniform Diamet 4. Ribben-Like 5. Tapered Ends Pleochroism (P) 1. Yes	orphology (M) 6. Sealed 7. Pitted 6. Medulla 9. Enoise (0. Other Birefringenees (1. Low: 0.010 2. Med 0.010-0.036 3. High >0.050 4. None 0.00 or ison	B) Fiber Color (Fi 1 White 2 Brown 3 Beige	f Etongstion (5)  C:) Extinction (E)  1. Parallet  2. Symmetrical  1. Oblique  4. Un duiose
HOMOGENEIT 1 Homogeneous 3	Y (H) OTHER Lavers (#)	reat	Stereo Asbestos Est. %	Asbestos Type	% of Asbestos	Fit	ther crous %	Non-	Fibrous	Non-Asb Char. Ex. E4			Properties	
RR-00021	(C) 3 (T) 2	1	٥	ND	0			20	100			⊥ R.I. M		II R.I. S
	(H) <b>(</b>										P	В	(FC)	E
RR-00022	(C) 3 (T) 2	.	TR	4/5	0.1			20	100		1.625		1.63	3    R.L. 8
KK-00-22	(H)	`	1.								2 P		(FC) 6	3 E
·	(C) 3			ND	0			20	100			⊥ R.I.		R.I.
PR-00023	(T) Z		0									М		S
	(H) <b>(</b>										P	В	(FC)	E
PO 0003E	(C) 3		TR	4/5	0.1			20	100		1.620		1.62	o ∥ ∥R.I. s
RR-00025	(H) (		''\								2	( B	(FC) (p	3 E
	(C) 3			ND	0	-	-	20	100			⊥ R.I.		R.I.
RR-00026	(T) 2	İ	0								P	M B	(FC)	S E
	(c) 3	_		ND	0	=		20	100			⊥ R.i.	107	R.L
RR-00027	m 2	-	0	NP		-		20	100			М		s
NK-00-2	(H)							<b>-</b>			P	В	(FC)	E
	(C) 3			ON	0	7	ઝ	20	92			⊥ R.I.		R.I.
RR-00028	(T)		0									М		S
	(H) <b>1</b>			-							P	В	(FC)	E
	(C) 3	T		ND	0			20	100			⊥ R.I.		R.I.
RR-00029	(T) 2		0									М		S
	(H)										P	l	(FC)	E
	(0).3			ND	0	Gi		20	100			⊥ R.I.		R.I.
RR-00030	(T) Z		0									М		S
	(H)							<u> </u>			P		(FC)	E
<i>(</i> 2.4) = = ==	(C) 3			ND	0	****		20	100			⊥ R.I.		R.I.
RR-00031	(i) Z	1	0			<b> </b>						м		s
	(H) <b>(</b>							<u> </u>			, P	В	(FC)	E

Analyst: KBarnes	Date:	4/24/28/09	Computer:		Date:	
Room Temp (C): 18.6		, . E [,]	MSL Analytical,	Inc.		PLM7.9.0

### PIMVE: SR(-LIBBY-1)3. REY

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wo milalyon Ulbula wateran	la Li 21 0007:	C NOTE OF THE	erou usir	ig I olariz	cu Lignt	ROU.2	_
	B.#:	•				LOA	

Client: TAT: Logged: Address: Date/Time Due: **Special Instructions** Order Number Fax: 270900047 Project:

			· [		-	COMPON	ENT TY	PES		-	T	MICRO	SCOPIC	
Macro	scopic		atment	Asbesto	os	Fibr			Non-Fib	rous		Optical	Propertie	
COLOR 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Vario  TEXTURE 1 Fibrous 2 Non-I	7 Black 8 Silver ous 9 Blue 10 Yellow	1 Tea 2 Cre 3 Dis 4 Ash 5 Hea 6 Med	ushed 2 ssolve 3 hed 4 sted 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	I 1. Wave	Straight 7. Fitted  1. Uniform Diameter 8. Medville  1. Ribben-Like 9. Exade S  1. Tapered Ends 10. Other  Pleochroism (P) Ricefringences (  1. Yes 1 Low: 0.010		C) Eatination (5)  1. Parallel 2. Symmetrical 3. Oblique 4. Undulose
HOMOGENEI  1 Homogeneous  2 Heterogeneous			Stereo Asbestos Est. %	7.0000000	% of	Fil	ther prous	Non-	Fibrous	Non-Asb Char.	1		topic 4 Blue 5 Groon 6 Coloriess	
Sample	Macrosc. T	reat	ESI. 76	Type	Asbesto	S Type	<u>%</u>	Type	%	Ex. E4			Propertie	
RR-00032	(C) 3 (T) 2	,	Ò	NP	Ō			20	100			⊥ R.I. M	<u> </u>	R.I.
KK-00052	(H)	'	U			+					P	. В	(FC)	E
	(C) 3	$\overline{}$		ND	0		**************************************	20	100			⊥ R.I.		R.I.
RR-00033	(T) 2	1	0									М	***************************************	S
	(H) [										Р	В	(FC)	E
	(C) 3	- 1	_	ND	0			20	100			⊥ R.I.		ĮĮ R.I.
RK-00034			٥						<u> </u>			М		S
	(H) <b>(</b>										P	В	(FC)	E
	(C) 3			ND	0		<b>—</b> ,	20	100			⊥ R.i.		R.I.
RR-00035	(T) 2	1	0								P	M B	(FC)	S E
												⊥ R.I.	(PC)	
	(C) 3 (T) 2		O	in	0	******		20	100	•		М		R.I.
RR-00036	(T) 2 (H) (	1	$\mathcal{O}$			-					P	В	mm	E
				ļ				<u> </u>					(FC)	
	(C) 3	.		ND	6			20	100			⊥ R.I.		ĮĮ R.J.
RR-00037	(T) 2	1	0									М	ļ	S
	(H) (										P	В	(FC)	Е
	(0) 3		2	ND	0			20	100			⊥ R.I.		R.I.
RK-00038	(T) 2	-	0									М		S
	(H) (			1.							P	В	(FC)	Е
_	(C) 7+		^	ND	0			20	100			≟ R.I.		ĮĮ R.I.
RR-00039	(T) 2		0									М		S
	(H)										P	В	(FC)	E
	(C) 2			ND	0			20	100			⊥ R.I.		R.L
RR-00040	) (i) Z		0									М		S
	(H)										P	В	(FC)	E
	(C) 7		_	ND	0	70000		20	100			⊥ R.I.		R.I.
RR-00041	(T) 2	1	0									М	-	S
,	(H) 1										P	В	(FC)	E

Analyst: KBWWB	Date:	4/28/09	Computer:		Date:	
Room Temp (C): 2.D. 6		F	MSL Analytical	Inc.		PLM7.9.0

### E: SRC-LIBBY-0

Client: TAT: Logged: Address: Date/Time Due: **Special Instructions** Order Number Fax: 270900047 Project:

					C	OMPON	ENT TY	PES			MICROSCO		SCOPIC	
Macros			atment	Asbesto	os	Fibr			Non-Fib	rous			Prop <b>erties</b>	
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou TEXTURE ( 1 Fibrous 2 Non-Fi	7 Black 8 Silver s 9 Blue 10 Yellow	2 Cr 3 Di 4 As 5 He 6 Me	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	2. Straight 3. Uniform Diamet 4. Ribbon-Like 5. Tapered Ends Pleachroism (F) 1. Yes 2. No	orphology (M) 6. Seafed 7. Pined 7. Pined 9. Exatic 5 10. Other Birefringenece (1 Lew: 0.010 2 Med 0.010-0.050 3 High >0.050 4 None 0.00 or Isot	1. + 2 3. Variable B) Fiber Calor (FO 1 White 2 Brown 3 Beige	Elongstion (S)  ) Estinction (E)  1. Parallel  2. Symmetrical  3. Oblique  4. Undulose
HOMOGENEIT 1 Homogeneous 3 2 Heterogeneous 4	Y (H) OTHER Lavers (#)		Stereo Asbestos Est. %	1,0000000	% of	Fil	ther crous	Non-l	Fibrous	Noп-Asb Char.				
Sample	Macrosc.	Treat	L-St. 76	Туре	Asbestos	Туре	%	Туре	%	Ex. E4			Properties	
- 0 10	(C) 2			ND	0			20	100			⊥ R.I.		R.I.
RR-00042	(T) <b>2</b>		0								P	В	(FC)	S
	(c) 2					+						⊥ RJ.	(10)	
RR-00043	(T) 2			ND	0	-		20	100			M		IJ R.L.
KK-00049	(H) (	1	0	-							P	В	(FC)	E
	(C) 2			ND	0			20	100			⊥ R.I.		R.I.
RR-00044	(T) 2	1	0						100			М		s
	(H)	1									P	В	(FC)	E
	(C) I	_		ND	0	***************************************		,20	100			⊥ R.I.		R.J.
RR-00045	(T) <b>2</b>	1	0									М		S
	(H) [										P		(FC)	Е
	(c) 3		_	ND	٥	*		20	100			⊥ R.I.		IIRI.
RR-00046	(T) 2	1	0									M		. S
	(H) <b>(</b>										P	l	(FC)	E
	(C) 3			ND	0			20	100			⊥ R.I.		R.I.
RR-00047	(T) 2	l	0									М		S
	(H)										P		(FC)	E
	(C) 3			ND	0	ACCEPTANT		20	100			⊥ R.I.		R.I.
RR-00048	(T) 2	1	0								P	В		S
	,			110					174		, r	⊥ R.I.	(FC)	E
000	(C) 3	,	_	DU	0	<b>  -</b>		20	100			M		R.I.
RR-00049	(T) 2	1	Ô			-					P		(FC)	E
	1 1			1ATO	0	-		20	100			⊥ R.I.		Į[ R.I.
RR-00050		1	0	ND				20	100	-		м	,	S
KK-WOO	(H)	1									P	В	(FC)	E
	(C) 3			ND	0			20	100			⊥ R.I.		R.J.
RR-0005)	(T) 2	١ ١	0	<del>                                     </del>	_			<u> </u>	100			М		s
100	(H) 1	'				1		<b></b>			P	В	(FC)	E
L	<u> </u>				L				L			<u> </u>		

Analyst:	Barnes	Date: 4/28-29/09	Computer:	,	Date:	
Room Ten	np (C):21.4	E	MSL Analytical,	Inc.		PLM7.9.0

### IE: SRC-LIBBY-03, REY

Logged:

TAT:



Address:

Date/Time Due:

Fax:

Project:

Special Instructions

Order Number 270900047

					C	OMPON	ENT TY	PES				MICRO	SCOPIC	
Macrosi	•	Treatr		Asbesto	os	Fibr			Non-Fib	rous			Properties	
COLOR (C  1 Brown 4 White  2 Gray 5 Red  3 Tan 6 Variou  TEXTURE (	7 Black 8 Silver s 9 Blue 10 Yellow	1 Tease 2 Crush 3 Disso 4 Ashed 5 Heate 6 Melte	ned 2 A olve 3 A d 4 T ed 5 A	Chrysotile umosite anthophyllit remolite actinolite crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	Z. Straight	.5might 7, Pitted Uniform Diameter 8, Medulta Rabon-Like 9, Exotic St Tapeard Ends 10, Other teochroism (P)   Birefringenese (B Yes 0,010		Extinction (E)  Extinction (E)  i. Pacified  2. Systemetrical  3. Oblique
	Y (H) OTHER Lavers (#) Macrosc T	A	Stereo sbestos Est. %	Asbestos Type	% of Asbestos	Fil	ther crous	Non-I	Fibrous %	Non-Asb Char. Ex. E4			Properties	4. Undulese
RR-00052	(C) 3		D.	ND	0	,		20	100			⊥ R.I. M		R.I.    S
KK-WOSE	(H) [	1									P		(FC)	E
	(C) 3			ND	0			20	100			⊥ R.I.		R.I.
RR-00053	(T) Z	(	0								P	М	(FC)	S E
	(0) 3	_		ND	0			20	100			R.I.	,,,,	IJ R.I.
RR-00054	(T) 2	1	D									М		s
	(H) (	_		. ~~		-					P	B ⊥RJ.	(FC)	E    R.I.
RR-00055		1	0	ND	0			20	100			M		S S
KK-10030	(H) ]	<b>'</b>									P	В	(FC)	E
	(C) 3			S	0			20	100			⊥ R.I.		R.I.
RR-00056	(T) Z	1	0					<u> </u>			P	M B	(FC)	S E
	(C) 3			ND	0	_		20	100			⊥ RJ.		JI R.I.
RR-00057	(T) 2	1	0								15	М		s
	(H) 1 (C) 3			415	0			20	1000		Р	B 	(FC)	E   R.L
RR-00058	(T) 2		0	ND				20	100			М		s
	(H) (										P		(FC)	E
20 2000	(C) 3 (T) 2		_	ND	0			20	100			⊥ RJ. M		∦R.I. S
RR-00059	(H) (	1	D			-					P		(FC)	E
	(C) 3			ND	0	-	-	20	100			⊥ R.I.		R.I.
RR-00040	(T) <b>2</b> (H) /		Q								P	M B	(FC)	. S
	(h) (	_		ND	0	•		20	100			⊥ R.i.	(PC)	II R.I.
RR-00061	(T) 2		0	70.0		<del>                                     </del>		-20	100			М		s
	(H) (				·						P	В	(FC)	E

Analyst:	UBarnes	Date:	4/29/09	Computer:		Date:	
Room Ten	np (C):20 • O		E	MSL Analytical,	Inc.		PLM7.9.0

## E: SRC-LIBBY-0

Client:
Address:

Logged:

Date/Time Due:

TAT:



Fax:

Project:

Special Instructions

Order Number

270900047

			- (	COMPON	ENT TY	PES			<u> </u>	MICRO	SCOPIC		
Macroscopic	Treatment	Asbesto	os	Fibr	_		Non-Fib	rous			Properties		
COLOR (C)  1 Brown 4 White 7 Black 2 Gray 5 Red 8 Silver 3 Tan 6 Various 9 Blue 10 Yellow  TEXTURE (T) 1 Fibrous 2 Non-Fibrous 3 Other	1 Teased 2 Crushed 3 Dissolve 4 Ashed 5 Heated 6 Melted	1 Chrysotile 2 Amosite 3 Anthophyllit 4 Tremolite 5 Actinolite 6 Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mics 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Oths	i sum Carbona ix lite	te	1. Wavy 2. Straight 3. Uniform Diam 4. Ribbon-Like 5. Tapered Ends Picochroism (P) 1. Yes 2. No	forphology (M) 6. Scaled 7. Princet ster 8. Medolla 9. Exolic S 10. Obter Birchingeness ( 1 Low: 0.010 2 Med 9.010-0.050 3 High >0.050	1. + Z 3. Variable hape B) Fiber Color (F 1 White 2 Brown 3 Beigs	C) Extinction (S)  L Parallel Symmetrical Oblique L thelesses	
HOMOGENEITY (H) 1 Homogeneous 3 OTHER 2 Heterogeneous 4 Lavers (#)	Stere Asbest Est. 9	os Asbestos	% of Asbesto	Fit	other prous %	Non-	Fibrous	Non-Asb Char. Ex. E4			5 Grees 6 Colortes		
Sample Macrosc, Tr	reat	ND	0	1,750	/°	20	Tias	EX. E4		⊥ R.J.	Propertie	<u>s</u> ∥R.J.	
RR-00062 117 2	10	105							P	М		S	
(H)									ŗ		(FC)	E	
RR-00201 (1) 2	10	ND	0		_	20	100			⊥ R.I. M		ij R.i. S	
(H) 1	'   0						-		P	В	(FC)	E	
(C) 4	1	ND	0	*City,cont		20	100			⊥ R.I.		R.I.	
RR-00202 (17) 2	1 (3)	,					•			М		s	
(H) (									P	В	(FC)	E	
(C) 3		CO	0	-	-	20	100			⊥ R.I.		∦ R.t.	
RR-00203 (T) Z	0								P	M B	(FC)	S	
										⊥ R.I.	(PC)		
(C) 4	,   ,	ND	0			20	100					R.I.	
RR-00204 (T) 2	1 0								P	M B	(FC)	S	
(C) 4		DN				20	100			⊥ RJ.		R.I.	
RR-00205 m Z	10	100		1		20				М		S	
(H)	`   -					<b></b>			P	В	(FC)	E	
(c) 3		OU	0			20	100			⊥ R.I.		R.I.	
RR-00206 (1) 2	10	-700	<u> </u>			<del>                                     </del>	† <u> </u>			М		s	
(H)				1		<b>†</b>			P	В	(FC)	E	
(C) 4		ND	0		->	20	100			⊥ R.I.		R.I.	
RR-00207 17 2	10	1.50				1				М		s	
(H)									P	В	(FC)	E	
(C) 4		ND	0	<u></u>	-	20	100			⊥ R.I.		R.I.	
RR-00 208 (1) 2	1 0									М		S	
(H) (									P	В	(FC)	E	
(C) 3		GN	٥	*********	~	20	100		⊥ R.I.			R.I.	
RR-00209 17 2	1 0									М		S	
(H)	·   •								P	В	(FC)	E	

Analyst: KBarnes	_ Date:	4/29/09	Computer:		Date:	
Room Temp (C): 21-5		E	MSL Analytical,	Inc.		PLM7.9.0

PLMVE:	SRC-	LIBBY.	03	REV.	4/30/04

Logged:

TAT:



Address:

Date/Time Due:

Fax:

Project:

Special Instructions

Order Number

				COMPONENT TYPES						MICROSCOPIC				
Macros			atment	Asbesto	os		ous	Non-Fibrous			Optical Properties			
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou TEXTURE ( 1 Fibrous 2 Non-Fi	7 Black 8 Silver S 9 Blue 10 Yellow	2 Cr	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. V 10 Synthe 11 Other 12 Wollas 13 Hair	lool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	sum Carbona ix Lite	te	2. Straight 3. Uniform Diame 4. Ribbon-Like 5. Tapered Easts Pleochroism (P) 1. Yes 2. No	torphology (M) 6. Sextod 7. Pitted ster 8. Medulls 9. Exotic: 10. Other Birchingenese 1 Low: 0.010 2 Med 0.010-0.050 3 High >0.050 4 None 0.00 or lso	(B) Fiber Color (Fi I White 1 2 Brown 3 Beige tropic 4 Blue	Efongation (5)  Description (6) Extinction (6) Parallo Symmetrical Oblique Undukse
	Y (H) OTHER Lavers (#)		Stereo Asbesto Est. %	s Asbestos	% of	Fi	Other brous	Non-	Fibrous	Non-Asb Char.			5 Green 6 Coloriess	22
Sample	Macrosc. T	reat	ESI. /6	Туре	Asbesto	Type	%	Туре	%_	Ex. E4			<b>Properties</b>	
RR-00210	(C) 4 (T) 2	T ALL DE LA COMPANIA	0	100	0	********		20	(00)		P	⊥ R.I. M	(FC)	II R.I.
00 50211	(C) 4 (T) 2	,	0	NO	0	_	-	20	100			⊥ R.i.	(10)	IJ R.I.
RR-00211	(H) 1	(	U								P	В	(FC)	E
RR-00212	(C) 3	ı	$\Diamond$	ND	O.			20	100			⊥ R.I. M		R.I. S
700000	(H) <b>(</b>			1.6							Р	B ⊥ R.I.	(FC)	E
RR-00213	(C) 4 (T) 2	1	0	ND	0	\		20	100			М		R.I.
	(C) 4			ND	0			20	100		P	B ⊥ R.I.	(FC)	E    R.I.
KR-00214	(T) <u>2</u>	1	0								P	М		S
	(C) 3			ND	0	-		20	100			⊥ R.I.	(FC)	∥R.I.
RR-00215	(H) (	1	O					·			P	M B	(FC)	S
	(C) 4			ND	D	-		20	100			⊥ R.I.	((0)	II R.I.
RR-00216	(T) 2 (H) 1	l	0								P	M B	(FC)	S E
	(C) 4			ND	0			20	100			⊥ R.I.		[R.J.
RR-00217	(T) <b>2</b> (H)		0						<b> </b>		P	M B	(FC)	S E
20 -0210	(C) 3	,	<u>Λ</u>	ND	0			20	00			⊥ R.I.		R.L
RR-00218	(H) (	1	0								P	В	(FC)	S E
	(C)	- Charles			VP,			20				⊥ R.I.	F 40 - 1 - 1 - 1	II R.I.
	(T) (H)			,	4/30	109	Anna ann ann ann ann ann ann ann ann ann				F	М	<u> </u>	S E

Analyst: Warnes	Date:	4/30/09	Computer:		Date:	
Room Temp (C):   8 .		EM	MSL Analytical,	Inc.	•	PLM7.9.0

#### REFRACTIVE INDEX LIQUIDS

Instructions: Please see and follow attached table from Shu-Chun Su, Technical Expert for NVLAP Asbestos Programs. (Suggested Format for Recording Results of RI Liquids Calibration using Cargille Glass Standard and Dispersion Staining Method -Version: February 1996)

### The following components are included in the table: 1 Date

- 2 Nominal or Labeled np 25 degree Celsius
- 3 Cargille Glass
- 3a Nominal or Labeled R.I.
- 3b Lot No.
- 4 Central Stop DS Observation
- 4a Predominant DS Color
- 4b Corresponding alpha₀
- 5 Liquid or Room Temperature (degree Celsius)
- 6 Actual or Calibrated n_D 25 degree Celsius
- 7 Difference between Calibrated n_D 25 degree Celsius and Labeled n_D 25 degree Celsius
- 8 Accept or Reject
- 9 Analyst

#### Calibration Of Common RI Oils

Date: 4/17/09

RIC	Oil	CARGILLE GLASS		CENTRAL STOP DS						
N _D	Lot#	Labeled RI	Lot#	DS Color	$\lambda_0$	dN _D /dt	TR	N _X	N _D -N _X	Accept or Reject
1.550	13619HI	1.550	С	BLUE	600	4.91E-04	19.0	1.549	0.001	ACCEPT
1.605	0701	1.600	В	BLUE	620	4.41E-04	19.1	1.601	0.004	ACCEPT
1.680		1.680	С	BLUE	600	4.75E-04	19.1	1.677	0.003	ACCEPT
1.700		1.700				4.80E-04			1.700	REJECT

From Su (1996) RI Oil Conversion Tables Temperture Corrected

N_D=The Refracted Index the Manufacturer Calibrated for the Oil At 25° C

 $\lambda_0$  = Associated wavelength of observerd Dispersion Staining Color (from McCrone color chart)

dn₀/dt=The Change in Refractive Index per Degree Celsius from RI Oil bottle

T_R=Room Temperature at the Time of the Calibration in °C

N_X=The Refractive Index Measured During Calibration

Analyst:

Signature / Date

#### Calibration Of Non Common RI Oils

Date:

4/17/09

Central Stop Dispersion Staining					lass	gille G	Caı		Oil	RI	
T _R °C	Κ _D	λο	DS Color	nc	n _F	Lot#	Lableled Ri	n _F -n _C	dn _o /dt	Lot#	Labeled N _D
19.0	0	589	Purple	1.62065	1.63824	В	1.625	0.0275	-4.52E-04	0807	1.625
<u> </u>											
-											
-											
										<b>.</b>	

RI C	)il			Calculated Valu	ted Values			
Labeled N _D	Lot#	n _o liq	N _{CORR}	Labaled N _D -N _{Corr}	Accept or Reject			
1.625	0807	1.625	1.622	0.003	ACCEPT			
				]				

Labeled No=The Refracted Index the Manufacturer Calibrated for the Oil At 25° C

dn_D/dt=The Change in Refractive Index per Degree Celsius

Oil n_F-n_C = Dispersion Coefficient of RI Oil

Solid n_F-n_C = Dispersion Coefficient of Cargille Glass used

 $\lambda_0$  = Associated wavelength of observed Dispersion Staining Color (from McCrone Color chart)

 $K_D$  = Coefficient determined for matching DS wavelength

T_R°C = Room temperature at time of calibration in °C

n_D liq =The Refractive Index Measured During Calibration

N_{Corr}=The Refractive Index After Temperature Correction Of N_D liq

Analyst

Mannes 5/13/09

Signature / Date

#### STANDARD LABORATORY DATA PACKAGE CHECKLIST

Instructions: All applicable data package deliverables are included in the following nine pages. Using the print option will print out all forms necessary and in the appropriate order. Please provide information as directed.

#### Analytical Test Report Bulk Asbestos Analysis by Polarized Light Microscopy (PLM)

Prepared For:	EMR, Inc. 11 East Superior Street		
City/State:	Duluth, MN 55802		
Laboratory Name: City/State:	EMSL Analytical, Inc. Libby, Montana		
Laboratory Job No.: Method Utilized	270900048		
(SOP and Rev. No.):	STOLLING PLM-GRHV (SRC-LIBBY-01, Rev. 1)		
Circle One:	Visual Estimation Point Counting Approach		
Report Reviewed by:			
STANDARD LABOR	ATORY DATA PACKAGE CHECKLIST		
Instructions:	For PLM analytical results raw data packages, complete and sign the following checklist. Attac supporting documentation as outlined below. Organize the supporting documentation in the order listed below. Paginate the completed raw data package.	h Laboratory Verification (Initials and Date)	Validator Verification (Initials and Date)
1	Number of samples received: 57	100 11-01-6	de Windog
	An SDG is defined as no more than 200 samples.	KP 4/30/09	De 10709
	Additional Supporting Documentation: Attach COC forms having footer R (report).		
2	Date of sample receipt and condition of samples: 4/24/2009 OK		61
	For Condition of samples enter "OK" or "See SDG Case Narrative".	KB4130109	or almos
3	SDG Case Narrative:		
	Additional Supporting Documentation: Attach SDG Narrative and any modification forms.	KB 4/30/09	a copyog
4			
	Check for contamination (daily): Wipe microscope slides with lens paper before using Laboratory Verification initial and date signifies that this has been performed for the sample in this SDG.	**	<u> </u>
-		•	•
5	<u>Verification of the refractive indices of the refractive index liquids once per month:</u> Additional Supporting Documentation: Provide information indicating a monthly		
	record of checking each of the four liquids including liquid name, lot number and		
	analyst initials. (See table - Results of RI Liquids Calibration)	WB4/30/09	12 (P)
6	Verification of microscope adjustments prior to each SDG:		
	Laboratory Verification initial and date signifies that this has been performed for the sample in this SDG.	x484/80/09	NA
7	Reference material - Visual Estimation Approach:		
	Laboratory Verification initial and date signifies that this has been performed for the sample in this SDG.	143 4/30/09	4)4
	Reference material - Point Counting Approach:		
	Additional Supporting Documentation: Provide calibration curve documentation,	1-01	
	printed from the EDD spreadsheet.	CB4/30/09	N/A
8	VE and/or PC hard copy data forms (as presented in the EDD spreadsheet):		
	Additional Supporting Documentation: Copies of the Hard Copy Data Forms for all		
	investigative samples and laboratory duplicates will be provided from systems that are entered electronically.	KB4/30/09	a 427/09
9	Bench sheets for data results:		
•	Additional Supporting Documentation: Provide copies of the hand written or LIMS	KB4/30/09	en 424/00

COCs

#### **Libby Asbestos Investigation**

ı	No		D	2	5	9	2
•	10	•	•	4	v	J	4

From: CDM
2714 Walnut St
Denver, CO 80205

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

		SL-Westmont								
107 Haddon Ave										
Ī	Westmont, NJ 08108									
٧	/ia:	hand delivery	<b>✓</b> shipped							
		Date Shipped:	4/22/2009							
		Carrier Name	Fed-Ey							

Airbill:

270900048

							210100010		
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00001	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		17
	RR-00002	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV
	RR-00005	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		V
	RR-00011	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))	***************************************	IV
	RR-00012	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV
	RR-00013	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV
	RR-00014	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		V
	RR-00015	С		9/17/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		V
7	RR-00016	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV
	RR-00017	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		TV TV
	RR-00018	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		V

*Suffix IDs: C≈ Coarse; B≈ Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples57		END OF SUBMITTAL		
Additional Comments:			And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	QCID 989 047209
				/ '
Relinquished by (Signature and Company)	1 4 22 09 Date/Time	Received by (Signature and Company)	Date/Time	OK & ACCEPT Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

#### **Libby Asbestos Investigation**

No.	D	2	5	9	4
,	_	-	•	~	4

N/A

From: CDM 2714 Walnut St Denver, CO 80205 U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EM:	SL-Westmont					
	107 Haddon Ave						
	Westmont, NJ 08108						
	via:	hand delivery	shipped				
		Date Shipped:	4/22/2009				
		Carrier Name:	Fed-Ex				

Airbill:

2700m04B

	270400 10								
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00019	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
	RR-00020	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		1
7	RR-00021	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		W.
J.	RR-00022	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		N.
1	RR-00023	С		9/18/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		V
	RR-00025	С		9/19/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
7	RR-00027	С		9/19/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		T IV
	RR-00028	С		9/19/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		
	RR-00029	С		9/19/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
	RR-00030	С		9/19/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		li,
T	RR-00031	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		T-

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples57		END OF SUBMITTAL		
Additional Comments:				QC'd 989 0422
Carry Madrid Company, Relinquished by (Signature and Company)	4/22/09 125 Date/Time	Received by (Signature and Company)	4/24/09 1345 Date/Time	OK Jacleef) Sample Condition upon Receipt
Elylph ). What Flacedor/EV. Relinquished by (Signature and Company)	5/5/09/09 Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Apr 24, 2003 Rev 1		Applyso 2010 word <b>Copy</b>		Page 2 of 6

#### **Libby Asbestos Investigation**

No	D2	59	2

From: CDM	
2714 Walnut St	
Denver, CO 80205	

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

		• •						
Send to:	EM	SL-Westmont						
	107 Haddon Ave							
	We	stmont, NJ 08108						
	via:	hand delivery	<b>✓</b> shipped					
		Date Shipped:	4/22/2009					
		Carrier Name:	Fed-Ex					
		Airbill:	N/A					

270900048

						210900070		
Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water, D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
RR-00032	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		T
RR-00033	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
RR-00034	C		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		Te/
RR-00035	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		14
RR-00036	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
RR-00037	С		9/22/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		TP/
RR-00039	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		TV,
RR-00040	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
RR-00041	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		17
RR-00042	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		17/
RR-00043	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		マ
	R-00032 R-00033 R-00034 R-00035 R-00036 R-00037 R-00039 R-00040 R-00041 R-00042	R-00032 C R-00033 C R-00034 C R-00035 C R-00036 C R-00037 C R-00039 C R-00040 C R-00041 C R-00042 C	R-00032 C C R-00033 C R-00034 C C R-00035 C C R-00036 C C R-00037 C R-00039 C R-00040 C R-00041 C R-00041 C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-00042 C R-	R-00032   C   9/22/2008   R-00033   C   9/22/2008   R-00034   C   9/22/2008   R-00035   C   9/22/2008   R-00036   C   9/22/2008   R-00036   C   9/22/2008   R-00037   C   9/22/2008   R-00039   C   9/23/2008   R-00040   C   9/23/2008   R-00041   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/23/2008   R-00042   C   9/	Suffix ID*   Suffix #   Sample Date   Date   Sesoii; W=Water, D=Dust; A=Air;B=Bulk Insulation)   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation   Name of the Insulation	Suffix ID*   Suffix #   Sample   Date   Date   Suffix #   Sample   Date   Suffix #   Sample   Date   Suffix #   Sample   Suffix #   Sample   Suffix #   Sample   Suffix #   Sample   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suff	Natrix   Sample Date   Date   Suffix #   Sample Date   Suffix #   Sample Date   Suffix #   Sample Date   Suffix #   Sample Date   Suffix #   Sample Date   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #   Suffix #	Natrix   Sample   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Dat

Total Number of Samples 57 END OF SUBMITTAL

Additional Comments:

COA 987 042209

COA 987 042209

COA 987 042209

COA 987 042209

COA 987 042209

Reclinquished by (Signature and Company) Date/Time Received by (Signature and Company) Date/Time Sample Condition upon Receipt

Reclinquished by (Signature and Company) Date/Time Received by (Signature and Company) Date/Time Sample Condition upon Receipt

Reclinquished by (Signature and Company) Date/Time Received by (Signature and Company) Date/Time Sample Condition upon Receipt

#### **Libby Asbestos Investigation**

No.	D259

From: CDM
2714 Walnut St
Denver, CO 80205

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

Send to:	EM:	SL-Westmont						
	107	107 Haddon Ave						
	Westmont, NJ 08108							
	via:	hand delivery	✓ shipped					
		Date Shipped:	4/22/2009					
		Carrier Name:	Fed-Ex					

Airbill:

270900049

							2 10 4000 440		
Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00044	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV,
	RR-00045	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		17
	RR-00046	С		9/23/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		TV.
	RR-00047	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		1
	RR-00048	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		トレー
	RR-00050	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		
	RR-00051	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		To The
	RR-00052	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		Tu
	RR-00053	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		TV,
7	RR-00054	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		IV.
	RR-00055	С		9/24/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))	1	TV.

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples 57	END OF SUBMITTAL		
Additional Comments:			OC'd 989 042209
Carre Madud CDM 4/22/09 Relinquished by Signature and Company) Date/Time  Elist J. World-Remador/SMSL 5/13	169/0949		
Relinquished by (Signature and Company) Date/Time	Received by (Signature and Company)	Date/Time 5	Sample Condition upon Receipt
Relinquished by (Signature and Company) Date/Time	Received by (Signature and Company)	Date/Time S	Sample Condition upon Receipt

#### **Libby Asbestos Investigation**

No.	D2592
110.	

From: CDM	Annual Manager of Albertan
2714 Walnut St	Manager 1990 to Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Appendix and Ap
Denver, CO 80205	

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

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107	Haddon Ave	
We	stmont, NJ 08108	3
via:	hand delivery	✓ shipped
	Date Shipped:	4/22/2009
	Carrier Name:	Fed-Ex
	Airbill:	N/A

270000040

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00056	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		Ti-
	RR-00057	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		
	RR-00058	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		Ti-
	RR-00059	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		Te.
	RR-00060	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		T
	RR-00061	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		T.
	RR-00062	С		9/25/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))	<u></u>	T/
7	RR-00203	С		10/31/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		To the second
7	RR-00206	С		11/4/2008	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))	***************************************	Ī.
7	RR-00209	С		4/14/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		
8	RR-00212	С		4/15/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		1

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples57		END OF SUBMITTAL			
Additional Comments:				DC'd 9890422C	<u>9</u>
Corrue Madual COM Relinquished by (Signature and Company)	4/22/09 1.	250 ELIN J. What-Percode, Received by (Signature and Company)	7/24/09 Date/Time	345 OX + &CLIPT Sample Condition upon Receipt	1 E
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt	
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt	in is subvery
Apr 24, 2003 Rev 1		Riths Silver Annihalansi Republik Study		Page 5 of 6	

Apr 24, 2003 Rev 1

#### **Libby Asbestos Investigation**

No.	D2592

Airbill: ____ N/A

Page 6 of 6

From: CDM	
2714 Walnut St	
Denver, CO 80205	

U.S. Environmental Protection Agency, Region VIII 999 18th Street, Suite 300 Denver, CO 80202-2413

			<del>-</del>				
Send to:	EM:	SL-Westmont					
	107 Haddon Ave						
	We	stmont, NJ 08108	}				
	via:	hand delivery	<b>✓</b> shipped	i			
		Date Shipped:	4/2	22/2009			
		Carrier Name:		Fed-Ex			

270900048

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air,B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
	RR-00215	С		4/17/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))	***************************************	F
8	RR-00218	С		4/21/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive C	Coarse; BA= Archive Bu	ılk; FA= Archive Fine; FGA≂Archive Fine Ground		
Total Number of Samples57		END OF SUBMITTAL		
Additional Comments:	4.77			OC'd 989 04220
Carre Madrid Com 4 Relinquished by (Signature and Company)	22[09]	250 ELUL J. Wy ett - Pescudo Received by (Signature and Company)	n/s > 6 4/24/09/13  Date/Time	95 OK & accupt Sample Condition upon Receipt
Elila O Mast-Rescalor	nst 5/15/19/1 Date/Time	/	Date/Time	Sample Condition upon Receipt
Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt

4/24/2009 4:17:23 PM

Order ID: 270900048

Attn:

Fax:

**Scott Carney** 

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 Phone: (218) 625-2332

Project: D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31,

11/4/ 2008 & 4/ 14, 15, 17, 21/2009

**Customer ID** 

Customer PO:

Received:

04/24/09 1:45 PM

270900048

EMRI78

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Test: PLM Libi	oy Gravimetric <u>M</u>	atrix Soils	TAT:	72 Hour	Qty:	57
Acct Sts:	Sisprsn:	epodell	Logged: Sample Condition	jwyattpescador  Acceptable		4/24/2009
Samples Relind Samples Recei Package Mailed Method of Deli Includes: (Circ	ved: d to Westmont: very:	Date Date Date	Comments I poured Hem und	Unacceptable  No prep involved, of the Sample's out of der the Storescepe  p (Initials/Lab): Was  o (Initials/Lab):	only ana of a bag t	lysis. o examine  Date: 4/30 - 5/
Benchsheets Micrographs	Sample Slides GridBox	Sample filters Other		(Initials/Lab): Projects Use Only:		Date:
Finál Package Re	eceived:	Date:		tion: kage Review: \/ kage Mailed: \	Commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commence and the commen	Date: 8/10/09 Date: 8/10/09
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#### Special Instructions

Order ID	Lab Camaria #	Court Commiss #	Landian	Duo Doto
Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0001	RR-00001		4/27/2009 1:45:00 PM
270900048	270900048-0002	RR-00002		4/27/2009 1:45:00 PM
270900048	270900048-0003	RR-00005		4/27/2009 1:45:00 PM
270900048	270900048-0004	RR-00011		4/27/2009 1: <b>4</b> 5:00 PM
270900048	270900048-0005	RR-00012		4/27/2009 1:45:00 PM
270900048	270900048-0006	RR-00013		4/27/2009 1:45:00 PM
270900048	270900048-0007	RR-00014		4/27/2009 1:45:00 PM
270900048	270900048-0008	RR-00015		4/27/2009 1:45:00 PM

4/24/2009 4:17:23 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31,

11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID

Customer PO:

Received:

04/24/09 1:45 PM

270900048

BNSF Libby, MT 2008

EMRI78

EMSL Proj ID: **Cust COC ID** 

EMSL Order:

	· · · · · · · · · · · · · · · · · · ·		
270900048	270900048-0009	RR-00016	4/27/2009 1:45:00 PM
270900048	270900048-0010	RR-00017	4/27/2009 1:45:00 PM
270900048	270900048-0011	RR-00018	4/27/2009 1:45:00 PM
270900048	270900048-0012	RR-00019	4/27/2009 1:45:00 PM
270900048	270900048-0013	RR-00020	4/27/2009 1:45:00 PM
270900048	270900048-0014	RR-00021	4/27/2009 1:45:00 PM
270900048	270900048-0015	RR-00022	4/27/2009 1:45:00 PM
270900048	270900048-0016	RR-00023	4/27/2009 1:45:00 PM
270900048	270900048-0017	RR-00025	4/27/2009 1:45:00 PM
270900048	270900048-0018	RR-00027	4/27/2009 1:45:00 PM
270900048	270900048-0019	RR-00028	4/27/2009 1:45:00 PM
270900048	270900048-0020	RR-00029	4/27/2009 1:45:00 PM
270900048	270900048-0021	RR-00030	4/27/2009 1:45:00 PM
270900048	270900048-0022	RR-00031	4/27/2009 1:45:00 PM
270900048	270900048-0023	RR-00032	4/27/2009 1:45:00 PM
270900048	270900048-0024	RR-00033	4/27/2009 1:45:00 PM
270900048	270900048-0025	RR-00034	4/27/2009 1:45:00 PM
270900048	270900048-0026	RR-00035	4/27/2009 1:45:00 PM
270900048	270900048-0027	RR-00036	4/27/2009 1:45:00 PM
270900048	270900048-0028	RR-00037	<b>4</b> /2 <b>7</b> /2009 1:45:00 PM

4/24/2009 4:17:23 PM

Order ID: 270900048

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project:

(218) 625-2337

D2592

11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31,

EMSL Order:

Customer ID

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Customer PO:

EMSL Proj ID:

Cust COC ID

EMRI78

04/24/09 1:45 PM

270900048

BNSF Libby, MT 2008

270900048	270900048-0029	RR-00039	4/27/2009 1:45:00 PM
270900048	270900048-0030	RR-00040	4/27/2009 1:45:00 PM
270900048	270900048-0031	RR-00041	4/27/2009 1:45:00 PM
270900048	270900048-0032	RR-00042	4/27/2009 1:45:00 PM
270900048	270900048-0033	RR-00043	4/27/2009 1:45:00 PM
270900048	270900048-0034	RR-00044	4/27/2009 1:45:00 PM
270900048	270900048-0035	RR-00 <b>045</b>	4/27/2009 1:45:00 PM
270900048	270900048-0036	RR-00 <b>046</b>	4/27/2009 1:45:00 PM
270900048	270900048-0037	RR-00047	4/27/2009 1:45:00 PM
270900048	270900048-0038	RR-00048	4/27/2009 1:45:00 PM
270900048	270900048-0039	RR-00050	4/27/2009 1:45:00 PM
270900048	270900048-0040	RR-00051	4/27/2009 1:45:00 PM
270900048	270900048-0041	RR-000 <b>52</b>	4/27/2009 1:45:00 PM
270900048	270900048-0042	RR-00053	4/27/2009 1:45:00 PM
270900048	270900048-0043	RR-00054	4/27/2009 1:45:00 PM
270900048	270900048-0044	RR-00055	4/27/2009 1:45:00 PM
270900048	270900048-0045	RR-00056	4/27/2009 1:45:00 PM
270900048	270900048-0046	RR-00057	4/27/2009 1:45:00 PM
270900048	270900048-0047	RR-00058	4/27/2009 1:45:00 PM
270900048	270900048-0048	RR-00059	4/27/2009 1:45:00 PM

4/24/2009 4:17:23 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31,

11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID

Customer PO:

Received:

**Cust COC ID** 

04/24/09 1:45 PM

EMSL Order:

270900048

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

270900048	270900048-0049	RR-00060	4/27/2009 1:45:00 PM
270900048	270900048-0050	RR-000 <b>61</b>	4/27/2009 1:45:00 PM
270900048	270900048-0051	RR-00062	4/27/2009 1:45:00 PM
270900048	270900048-0052	RR-0020 <b>3</b>	4/27/2009 1:45:00 PM
270900048	2 <b>7</b> 0900048-0053	RR-00206	4/27/2009 1:45:00 PM
270900048	270900048-0054	RR-002 <b>09</b>	4/27/2009 1:45:00 PM
270900048	270900048-0055	RR-002 <b>12</b>	<b>4</b> /27/2009 1:45:00 PM
270900048	270900048-0056	RR-0021 <b>5</b>	4/27/2009 1:45:00 PM
270900048	270900048-0057	RR-00218	4/27/2009 1:45:00 PM

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

270900048

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Test: PLM Libby Gravimetric		<u>Matrix:</u>	Soils	TAT: 72 Hour	<b>Qty:</b> 57
Order ID	Lab Sample #	Cust. Sample #	Location		Due Date
270900048	270900048-0001	RR-00001		•	4/27/2009 1:45:00 PM

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Comments:	l
Comments.	ļ
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ANALYZED:	KB	Date:	4/30/09
Preliminary Data Sent to Special Projects:	R.Kon	Date:	5/4/09
Data Entry:	Q.	Date:	5/15/09
Simultare Review:		Oste:	
Data Validation:	TP	Dates	5/15/09
Reported to Chent:	+0	Date:	5719/09

Micrograph Number	Type Offraction or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMSL Order:

Cust COC ID

EMRI78

04/24/09 1:45 PM

270900048 EMSL Proj ID:

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0002	RR-00002		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	KB	Date:	4/30/09
Preliminary Data Sent to Special Projects:	RILM	Date:	5/4/04
Data Entry:	.ce	Oate:	51,5709
Structum Review:		Date:	
Data Validation:	tp	Date:	5/15/09
Reported to Chent:	TP	Date:	5/19/09

Microgreph Number	Type Offrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592 Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

270900048 BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0003	RR-00005		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	WB .	Date:	4/30/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	عد	Date:	5/15/09
Structure Review:		Date:	
Osta Validation:	·TP	Date:	5715/09
Reported to Glient:	TP	Date:	5/15/04

Miomgreph Number	Type Offrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

EMSL Order:

EMSL Proj ID: Cust COC ID

270900048

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0004	RR-00011		4/27/2009 1:45:00 PM

Comments:	 	 
į.		

ANALYZED:	KIB	Date:	4/30/09
Preliminary Data Sent to Special Projects:	Ren	Date:	5/4/09
Data Entry:	.Os	Ostet	5/15/05
Simultane Review:		Detwo	11-1
Data Validation:	TP	Date:	5715709
Reported to Client:	78	Daie:	5119/09

Micrograph Number	Type Orffrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Phone: (218) 625-2332

Customer ID:

Customer PO:

Received:

EMRI78

04/24/09 1:45 PM

EMSL Order:

EMSL Proj ID:

270900048

BNSF Libby, MT 2008 Cust COC ID

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0005	RR-00012		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	100	Date:	4/30/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Oata Entry:	<u>o</u> e	Date:	5/15/09
Sinucture Review:		Oats:	
Data Valiidation:	$\tau$	Date:	5115709
Reported to Client:	48	Daie:	57,9/09

Miorograph Mun	ober Type Offrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMRI78

EMSL Order:

270900048 BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0006	RR-00013		4/27/2009 1:45:00 PM

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ANALYZED:	KIE	Date:	4130109
Preliminary Data Sent to Special Projects:	R.Km	Date:	5/4/09
Osta Entry:	و ک	Date:	5115709
Structure Review:		Date:	t t
Data Validation:	TP	Date:	5715709
Reported to Glient:	78	Date:	5719/09

Microgreph Number	Type Offrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Atin:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

EMSL Order:

EMSL Proj ID: Cust COC ID

270900048

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0007	RR-00014		4/27/2009 1:45:00 PM

Comments:
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ANALYZED:	100	Date:	4/30/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Sinuctions Review:		Date:	
Osta Valiidation:	TP	Date:	5)15/09
Reported to Chenic	TP	Date:	5/19/09

Microgreph Number	Type Diffraction or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

D2592

(218) 625-2337

2008 & 4/ 14, 15, 17, 21/2009

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

EMSL Order:

Customer ID:

Customer PO:

Received:

EMSL Proj ID: **Cust COC ID** 

270900048

**EMR178** 

BNSF Libby, MT 2008

04/24/09 1:45 PM

Order ID Cust. Sample # Location **Due Date** Lab Sample # 270900048 270900048-0008 RR-00015 4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	4130/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	or	Date:	5/15/09
Simicture Rovina:		Dets:	
Data Validation:	TP	Date:	5/15/09
Reported to Chent:	18	Date:	5/19/09

Micrograph Number	Type Offraction or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

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EMSL Order:

**Cust COC ID** 

270900048

EMRI78

EMSL Proj ID:

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0009	RR-00016		4/27/2009 1:45:00 PM

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ANALYZED:	100	Date:	4/30/09
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Reported to Chent:	TP	Owie:	5/19/09

Micrograph Number	Type Offrection or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

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Duluth, MN 55802

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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270900048

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EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0010	RR-00017		4/27/2009 1:45:00 PM

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ANALYZED:	VIP .	Date:	5/1109
Preliminary Data Sent to Special Projects:	RKm	Date:	5/4/09
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Data Valildation:	TP	Date:	5/15/09
Reported to Client:	TP	Date:	5719/05

Micrograph Number	Type Diffraction or Morphology

4/24/2009 4:21:53 PM

Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Order:

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BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0011	RR-00018		4/27/2009 1:45:00 PM

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Data Validation:	TP	Date:	5715709
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Micrograph Number	Type Diffraction or Morphology

4/24/2009 4:21:54 PM

Order ID: 270900048

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Project:

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11 East Superior Street

Suite 260

Duluth, MN 55802

Fax:

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0012	RR-00019		4/27/2009 1:45:00 PM

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	Offraction or Morphology
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Order ID: 270900048

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Comments:

Scott Carney

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Suite 260

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Phone: (218) 625-2332

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0013	RR-00020		4/27/2009 1:45:00 PM

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Order ID: 270900048

Phone: (218) 625-2332

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Project:

Scott Carney

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

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EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0014	RR-00021		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/1109
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Osta Entry:	عد	Date:	5715/09
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Order ID: 270900048

Attn:

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Project:

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2008 & 4/ 14, 15, 17, 21/2009

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

EMSL Order:

Customer ID:

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270900048

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
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Microgreph Number	Type Orffrection or Morphology

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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

Suite 260

D2592

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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270900048 BNSF Libby, MT 2008

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Cust COC ID

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0016	RR-00023		4/27/2009 1:45:00 PM

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Comments:

ANALYZED:	KB	Date:	5/1109
Preliminary Data Sent to Special Projects:	R/cm	Date:	5/4/09
Data Entry:	t O1	Date:	5 15 109
Sinucture Review:		Date:	1 - 1 - 1
Data Validation:	10	Date:	5/15/09
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Microgreph Number	Type Chffrection or Morphology

4/24/2009 4:21:54 PM

Order ID: 270900048

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Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Order:

270900048

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0017	RR-00025		4/27/2009 1:45:00 PM

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ANALYZED:	KE	Date:	57,109
Preliminary Data Sent to Special Projects:	KKm	Date:	5/4/09
Data Entry:	.Oc	Date:	5/15/09
Sinucture Review:		Dates	i i
Data Validation:	TP	Date:	5/15/09
Reported to Client:	18	Date:	5/19/09

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4/24/2009 4:21:54 PM

Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2592 Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received: 04/24/09 1:45 PM

EMSL Order: EMSL Proj ID: 270900048

EMRI78

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0018	RR-00027		4/27/2009 1:45:00 PM

Comments:	 

ANALYZED:	KIB	Date:	5/1109
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	عرف محر	Osse:	5/15/09
Structure Review:		Date:	
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Micrograph Number	Type Offrection or Morphology
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332 D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMRI78

EMSL Order: EMSL Proj ID:

**Cust COC ID** 

270900048

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0019	RR-00028		4/27/2009 1:45:00 PM

Comments:	 	

ANALYZED:	WB .	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	er	Date:	510-109
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Order ID: 270900048

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Order ID

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

D2592

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

EMSL Order:

Customer ID:

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Received:

EMSL Proj ID: Cust COC ID

270900048

EMRI78

BNSF Libby, MT 2008

04/24/09 1:45 PM

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Lab Sample #

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**Due Date** 

270900048 270900048-0020 RR-00029

4/27/2009 1:45:00 PM

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ANALYZED:	VB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Order:

270900048

EMRI78

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0021	RR-00030		4/27/2009 1:45:00 PM

Comments:

ANALYZED:	KB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	<u>o</u> e	Date:	575/09
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

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D2592

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Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMRI78

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**Cust COC ID** 

EMSL Proj ID:

270900048

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0022	RR-00031		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RICM	Date:	5/4/09
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Order ID: 270900048

Phone: (218) 625-2332

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Fax:

Project:

Scott Carney

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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270900048

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0023	RR-00032		4/27/2009 1:45:00 PM

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Data Entry:	01	Date:	5/15/09
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Reported to Chent:	TP	Daie:	57,9/09

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Order ID: 270900048

Attn:

Fax:

Project:

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Phone: (218) 625-2332

D2592

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2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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EMSL Proj ID:

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0024	RR-00033		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Osta Entry:	<u>o</u> i	Date:	5/15/09
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Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

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(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

04/24/09 1:45 PM

270900048

EMRI78

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0025	RR-00034		4/27/2009 1:45:00 PM

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Comments:	

ANALYZED:	KB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
Data Entry:	, Qe	Date:	5/15/09
Structure Review:		Date:	
Osta Validation:	tP	Date:	5715/09
Reported to Client:	TP	Date:	5/19/09

Micrograph Number	Type Diffraction or Morphology

4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2592 Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMSL Order:

EMSL Proj ID:

Cust COC ID

04/24/09 1:45 PM

EMRI78

270900048

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0026	RR-00035		4/27/2009 1:45:00 PM

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Comments:		

ANALYZED:	KB	Date:	5/1/09
Preliminary Data Sent to Special Projects:	R Km	Date:	5/4/09
Data Entry:	<u>ىر</u>	Ostet	5/15/09
Structure Review:		Date:	1 6
Data Valiidation:	TP	Date:	5/15/09
Reported to Chemi:	TP	Duie:	5/19/09

Micrograph Number	Type
	Diffraction or Morphology
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4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

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270900048

EMRI78

EMSL Order: EMSL Proj ID:

BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0027	RR-00036		4/27/2009 1:45:00 PM

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Preliminary Data Sent to Special Projects:	RKIN	Date:	5/4/09
Data Entry:	, gr	Date:	5/15/09
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Data Valildation:	TP	Date:	5715109
Reported to Cileat:	TP	Date:	5719/09

Micrograph Number	Type Orfrection or Morphology
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4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

EMSL Order:

Received:

EMSL Proj ID:

Customer ID:

Customer PO:

270900048

EMRI78

BNSF Libby, MT 2008

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Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0028	RR-00037		4/27/2009 1:45:00 PM

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Preliminary Data Sent to Special Projects:	RKIM	Date:	514/09
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Order ID: 270900048

Attn:

Fax:

Scott Carney

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Duluth, MN 55802

D2592 Project:

(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMSL Order:

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BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0029	RR-00039		4/27/2009 1:45:00 PM

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Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
O <b>sta</b> Entry:	OL.	Date:	571. to9
Sinucture Review:		Date:	
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Microgreph Number	Type Orffraction or Morphology

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Order ID: 270900048

Attn:

Fax:

Project:

Comments:

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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EMSL Order: 270900048

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0030	RR-00040		4/27/2009 1:45:00 PM

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Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

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Duluth, MN 55802

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

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270900048 BNSF Libby, MT 2008

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0031	RR-00041		4/27/2009 1:45:00 PM

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Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Order ID: 270900048

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Fax:

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EMR, Inc.

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D2592

Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0032	RR-00042		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

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Project:

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EMR, Inc.

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Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Phone: (218) 625-2332

EMSL Order:

Customer ID:

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0033	RR-00043	,	4/27/2009 1:45:00 PM

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Preliminary Data Sent to Special Projects:	RKm	Date:	5/4/09
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0034	RR-00044		4/27/2009 1:45:00 PM

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Siructure Reviews		Date:	
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4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

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Duluth, MN 55802

(218) 625-2337

D2592

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Proj ID:

270900048 BNSF Libby, MT 2008

Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0035	RR-00045		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	5/4/09
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Structure Review:		Dete:	l'i
Data Valiidation:	TP	Date:	5715/09
Reported to Chent:	TP	Daie:	5719/09

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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

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Duluth, MN 55802

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D2592 Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Proj ID:

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BNSF Libby, MT 2008

**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0036	RR-00046		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	Rkm	Date:	5/4/09
Osto Entry:	.01	Oate:	515709
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Data Validation:	-10	Date:	5/15/09
Reported to Client:	TP	Date:	519/09

Miomgraph Number	Type Offraction or Morphology

4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

D2592

Duluth, MN 55802

(218) 625-2337

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

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EMSL Proj ID: Cust COC ID

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Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Order ID Lab Sample # Cust. Sample # Location **Due Date** 270900048 270900048-0037 4/27/2009 1:45:00 PM RR-00047

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/05
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Micrograph Number	Type Diffraction or Morphology
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4/24/2009 4:21:55 PM

Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Project:

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Phone: (218) 625-2332

EMSL Order:

Customer ID:

Customer PO:

Received:

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270900048

EMRI78

BNSF Libby, MT 2008

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**Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0038	RR-00048		4/27/2009 1:45:00 PM

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ANALYZED:	WB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	Klan	Date:	5/4/89
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	Micrograph Number	Type Offraction or Morphology
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Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

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Duluth, MN 55802

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D2592 Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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270900048

EMRI78

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0039	RR-00050		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Order ID: 270900048

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: Project: (218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMRI78

270900048

BNSF Libby, MT 2008

EMSL Proj ID: Cust COC ID

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0040	RR-00051		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Order ID: 270900048

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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EMRI78

270900048

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

EMSL Order:

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0041	RR-00052		4/27/2009 1:45:00 PM

Comments:	

ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	Rem	Date:	5/4/04
Data Entry:	٥١	Date:	5/15/09
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Microgreph Number	Type		
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Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

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Project:

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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EMRI78

EMSL Order:

270900048

BNSF Libby, MT 2008

EMSL Proj ID: **Cust COC ID** 

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0042	RR-00053		4/27/2009 1:45:00 PM

Comments:	
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ANALYZED:	KB	Date:	514/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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Order ID: 270900048

Attn:

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(218) 625-2337

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

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EMSL Order:

270900048

EMRI78

EMSL Proj ID: Cust COC ID

BNSF Libby, MT 2008

Order ID	Lab Sample#	Cust. Sample #	Location	Due Date
270900048	270900048-0043	RR-00054		4/27/2009 1:45:00 PM

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ANALYZED:	KB	Date:	5/4/09
Preliminary Data Sent to Special Projects:	RKM	Date:	5/4/09
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	Micrograph Number	Type Offrection or Morphology
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

Received:

EMSL Order:

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270900048

BNSF Libby, MT 2008


Order ID Lab Sample # Cust. Sample # Location **Due Date** 270900048 270900048-0044 4/27/2009 1:45:00 PM RR-00055

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Preliminary Data Sent to Special Projects:	RICM	Date:	5/4/09
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Structure Review:		Date:	
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Order ID: 270900048

Phone: (218) 625-2332

RR-00056

Attn:

Fax:

Project:

Order ID

270900048

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

2008 & 4/ 14, 15, 17, 21/2009

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EMSL Order: 270900048

EMSL Proj ID:

BNSF Libby, MT 2008

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	Microgreph Number	Type Oiffraction or Morphology
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Order ID: 270900048

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

Fax: (218) 625-2337 Project:

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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EMSL Order:

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0046	RR-00057		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592 Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0047	RR-00058		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0048	RR-00059		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 Fax: Project:

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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EMSL Order:

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
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Order ID: 270900048

Phone: (218) 625-2332

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592 Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0050	RR-00061		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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EMSL Order:

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0051	RR-00062		4/27/2009 1:45:00 PM

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project:

D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0052	RR-00203		4/27/2009 1:45:00 PM

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Reported to Client:	TP	Date:	5/19/04

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

Project:

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/

Phone: (218) 625-2332

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0053	RR-00206		4/27/2009 1:45:00 PM

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Micrograph Number	Type Chffrection or Morphology

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

Project: D2592

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Phone: (218) 625-2332

2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

Customer PO:

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EMSL Order:

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270900048

BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0054	RR-00209		4/27/2009 1:45:00 PM

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Reported to Client:	TP	Date:	51,9/09

Micrograph Number	Type Diffraction or <b>Morp</b> hology

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Order ID: 270900048

Attn:

Fax:

Scott Carney

EMR, Inc.

11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337

D2592

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Phone: (218) 625-2332

Cust COC ID

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EMRI78

BNSF Libby, MT 2008

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Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0055	RR-00212		4/27/2009 1:45:00 PM

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ANALYZED:	KP	Date:	5/4/09
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Order ID: 270900048

Attn:

Fax:

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Scott Carney

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11 East Superior Street

Suite 260

Duluth, MN 55802

(218) 625-2337 D2592

Phone: (218) 625-2332

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

Customer ID:

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0056	RR-00215		4/27/2009 1:45:00 PM

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Micrograph Number	Type Offrection or Morphology
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Order ID: 270900048

Attn:

Fax:

Project:

Scott Carney

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11 East Superior Street

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D2592

Samples collected 9/ 17, 18, 19, 22, 23, 24, 25, 10/31, 11/4/ 2008 & 4/ 14, 15, 17, 21/2009

(218) 625-2337

Phone: (218) 625-2332

EMSL Order:

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BNSF Libby, MT 2008

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900048	270900048-0057	RR-00218		4/27/2009 1:45:00 PM

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## STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### **SDG NARRATIVE**

Instructions: The following information should be included in all narratives. Please see the attached narrative template.

- 1 List the method or methods used.
- 2 For any modifications, reference the modification number and attach a copy of the signed document to the raw data package.
  3 If sample condition is not "OK", explain why and any implications to the data.



## **EMSL ANALYTICAL, INC.**

www.emsl.com

Corporate Office & Lab 107 Haddon Avenue Westmont, NJ 08108 PH 800-220-3675 PH 856-858-4800 FAX 856-858-4766

June 22, 2009

Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802 Phone: 763-277-5200

RE: SDG Narrative – PLM Analysis by SRC-Libby-03, Revision 2

EMSL Analytical, Inc. Laboratory Order ID: 270900048

Dear Mr. Carney:

Fifty-Seven (57) samples were received in a sealed box on 4/24/09 and signed for by the sample-receiving clerk. These samples were assigned to an internal EMSL laboratory order ID number of 270900048, each sample was assigned a unique, sequential laboratory ID number, and the job was entered into the Laboratory Information System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL internal Chain of Custodies. Sample condition and signatures are recorded on Chain of Custody D2592 as submitted by CDM Libby, MT.

These samples were analyzed in accordance with SRC-Libby-03, Revision 2 for the Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy, Visual Estimation Approach, with modifications described in Laboratory Modification document:.

Results were e-mailed to the Libby Distribution Group on 5/19/09. If you have any questions or require additional information, please do not hesitate to contact me at 856-858-4800, ext. 1253.

Sincerely,

EMSL Analytical, Inc.

Charles LaCerra

Special Projects Manager

## STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### SAMPLE RESULTS

See Attached Sample Results

Instructions: These sample result forms are from the PLM (VE & PC) Data Sheet and EDD.xls file. They are labeled in this file as the VE or PC hard copy data form.

#### Electronic Data Log Sheet v8 for SOP SRC-LIBBY-01 (Stereomicroscopic and Gravimetric Analysis of Coarse Soil)

File Name: Spreadsheet:	GRAV_EMSL27_270900048_04-30-09.xls Version 8	Electronic Data Entry by: L Ramowski Electronic Data Entry date: 05/15/2009	Click Here to Save File	Data entry fields  Missing required data entry or invalid entr  Possible data entry omission or error
Lab Name: SOP Version: Lab Job No:	EMSL27 PLM-GRAV (SRC-LIBBY-01 REV.1) 270900048	QA by: T. Peters QA date: 05/15/2009 4811	Save File	Calculated cells—Do not enter data here Data entry not required

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EPA Index ID	Suffix	Lab Job- Sample No.	2 = Missing		Weight (g)		Mass of Samole	Analyst Analys	,	Tare	Mass of LA	J		OA Type	Tare	Mass of OA		Tare	Mass of C	- 1	decimal pia uploade	ces. Full value d into database	es are	Comments (enter full text, not codes)
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RR-00002	c	270900048-0002	1	Not QA	2.21	58.93	56.73	. KB 4/30/20	9 ND				ND.	Name of the second			ID .							
RR-00005	c	270900048-0003	1	Not QA	2.22	54.77	52.55	KB 4/30/20	ON PD				NO		and the	1	ID I				an mark			
RR-00011	c	270900048-0004	1.	Not QA	2,21	6.96	4.76	KB 4/30/20	9 ND		1		ND				ID.	a contract contract						
RR-00012	C	270900048-0005	1	Not QA	2.23	47.79	45.55	: KB 4/30/20		Designation of the control			. ND			1	D			****			- december	21.4
RR-00013	C.	270900048-0006	1.	Not QA	2.28	41.73	39.45	KB 4/30/20	9 ND				ND:				(D					The second second		
RR-00014	С	270900048-0007	1, 5	Not QA	2.32	94.82	92.50	KB 4/30/20	9 ND		ART TIES		ND			N. Carlotte	ID.							
RR-00015	С	270900048-0008	1	Not QA	2.32	24.19	21.87	KB 4/30/20	9 ND		200000000000000000000000000000000000000	u grafiangang T	ND			1	iD .	*************	en en en en en en en en en en en en en e					
RR-00016	C	270900048-0009	1	Not QA	2.32	158,26	155.94	KB 4/30/20	09 ND	in a secondary			ND			1	ID	enstantant,			Annuages an			
RR-00017	С	270900048-0010	1	Not QA	2.30	60.22	57,91	KB 5/1/20	9 ND		njoyen seezet.		ND		engg talamarik Bir	1	ID .						400	
RR-00018	C	270900048-0011	1	Not QA	2.34	100.56	98.22	KB 5/1/20	9 ND	3.Competite	ing the constant		ND			N. C. C. C. C. C. C. C. C. C. C. C. C. C.	1D				Nach and State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of State of Sta			
RR-00019	C	270900048-0012	1 : .	Not QA	2.30	53.67	51.37	KB 5/1/20	9 ND	emplosumin			ND	profesione and an exercise	1	A	ID .							
RR-00020	С	270900048-0013	1 .	Not QA	2.34	46.46	44.12	KB 5/1/20	9 ND				ND			N	ID							***************************************
RR-00021	C.	270900048-0014	1	Not QA	2.33	61.81	59.48	KB 5/1/20	9 ND	TATE OF THE PARTY	330.000.000000	ntonougnaga,	ND			1	10						ekrang-	
RR-00022	С	270900048-0015	- 1 -	Not QA	2.36	39.58	37.22	KB 5/1/20	9 ND				ND		A	N .	iD							
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RR-00028	. C	270900048-0019	1	Not QA	2,35	47.80	45.45	KB 5/1/20	9 ND		A CALLETTE STORY		ND	to the second		1	ID .				rtonno (so			
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RR-00030	c	270900048-0021	1	Not QA	2.31	24.01	21.71	KB 5/1/20	9 ND				ND			1	10				aran aranggan			
RR-00031	C.	270900048-0022	1	Not QA	2.34	87.78	85.43	KB 5/1/20	IS ND				ND			N I	1D							
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RR-00039	C	270900048-0029	1 1	Not QA	2.38	37,50	35,19	KB 5/4/20	9 ND		ar paran sanahan i		ND				ID .							
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RR-00043	C	270900048-0033	1	Not QA	2.34	21.88	19.54	KB 5/4/20	9 ND			1	ND				Đ.							
RR-00044	С	270900048-0034	1	Not QA	2.31	10.60	8.29	KB 5/4/20	9 ND				ND			N	10	er en de la la la la la la la la la la la la la						
RR-00045	С	270900048-0035	1	Not QA	2.35	29.16	26,81	KB 5/4/20	9 ND				· ND		1	1	(D		Anna History					who is a second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second
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RR-00053	C	270900048-0042	17	Not QA	2.34	79.05	76,71	KB 5/4/20					ND				(D							
RR-00054	C	270900048-0043	-1 -	Not QA	2.34	44.03	41.68	KB 5/4/20			il.		ND.			A commence and a second and	٥,							
RR-00055	С	270900048-0044	1 .	Not QA	2.38	33.84	31.46	KB 5/4/20					ND	Secretary and a second	ili de como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como de la como	and of a transport of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state	10	c. en kini						
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RR-00057	С	270900048-0046	1 . 1	Not QA	2,37	67.86	65,49	KB 5/4/20					ND				ID	anar i dan		مألاديس			a rage ris	
RR-00058	C	270900048-0047	1	Not QA	2,36	84,44	82.08	KB 5/4/20		Value and			ND			AND STATE OF THE PARTY OF THE STATE OF	ID ·		Anna mai dh			and and the	en in	
RR-00059	С	270900048-0048	1	Not QA	2,34	33.26	30.92	KB 5/4/20					ND				10					real male or	55	
RR-00060	С	270900048-0049	1	Not QA	2.32	85.85	83.53	KB 5/4/20	_	2000	Philotopian .		ON		والمناف	where a single representation is the part of the second	10						ar man	
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RR-00062	C	270900048-0051	1	Not QA	- 2,35	-8,20	5.85	KB 5/4/20					, ND				10		100 3			de contribu		
RR-00203	c	270900048-0052	1	Not QA	2:34	67.22	64.88	KB 5/4/20					ND				ID.		de la companya d		and a second section of	an mania kala		
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RR-00209	С	270900048-0054	1	-Not QA	2.35	37.01	34.66	KB 5/4/20					ND				ID							
RR-00212	С	270900048-0055	1	Not QA	2.36	6.04	3.68	KB 5/4/20		-			ND		1		ID							
RR-00215	С	270900048-0058	1	Not QA	2.39	25,47	23.08	KB 5/4/20		E			ND				ND				i dan i			
RR-00218	c	270900048-0057	1 1 1	Not QA	2.35	42.73	40.38	KB 5/4/20	9 ND			J. Second	ND		di . Can	Anna Carla and A	ID I							

## STANDARD LABORATORY DATA PACKAGE CHECKLIST

#### BENCH SHEETS

Instructions: Please provide handwritten or LIMS system generated raw data sheets for sample results.

# Data Log Sheet v8 for SOP SRC-LIBBY-01

Stereomicroscopic and Gravimetric Analysis of Coarse Soil

Lab Name:

EMSL27

SOP Version:

PLM-GRAV (SRC-LIBBY-01, REV.1)

Lab Job No.

o. 270900048

			Status 1 = Analyzed	QA Type (Not QA)			Analys	is Details	Libby Amphibole (LA) Asbestos				Mass of Asbestos Particles (mg) Other Amphibole (OA) Asbestos					
EPA Index ID	Index Suffix	- Lab Job-Sample No.	2 = Missing 3 = Contam 4 = Cancelled		Empty Container		(g)	Analyst Initials	Analysis Date	LA Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of LA + Container (mg)	Mass (mg) LA	OA Qual* (ND, Tr)	OA Type** (AMOS, ANTH, CROC, UNK)	Tare Weight - Container (mg)	Mass of OA + Container (mg)	Mass (mg) OA
RR-00001	c	270900048- 0001	1		2.30862			KB	4/30/09	ND	200			ND				
RR. 00002	С	-0002	1	NOT	2.20504	58.9336		KB	4/30/09			•		ND				
RR-00005	C	-0003	l	Not	2.21944	54.7651		KB	4/30/09	2				ND				
RR-00011	C	-0004	l	not QA	2.20862	6.96420		KB	4/30/09	ND				ND				
RR-00012	C	-6005	1	U	2.23470	47.7891			4/20/09					ND				
RR-00013	C	-,0006	l	WAT	2.28155	41.7274		4	4/30/09					NP				
RR-00014	C	-0007	l	NOT	2.31503	94.816		KB	4/30/09					ND				
RR-00015	C	-0008	l	0-11	2.31890	1	13883	KB	4/30/09	ND				DN				
RR-00016	C	-0009	1	0211	2,32040	158.243		KB	4/30/09					ND				
PR-00017	C	-0010	1	not RA	2.30465	40,2158		MB	511/09	ND				ND				
RR-00018	C	-0011	1	(S21 1	2.33847	100.5621		KB	571/09	ND				ND				
RR-00019	C	-0012		W/	2.30001	53.669		KD	5/1/09	ND				ND				
RR-00020	C	-0013	1	1 100	2-34351	46.4603		KB	71/09	ND				ND				
RR-00021	C	-0014	1	V	2.32800	61.8093		KB	5/1/09	ND				ND				
RR-00022	C	-0015	[	O-7 (	2.3629		100000	KB	5/1/09	ND				ND				
RR-00023	C	-0016	1		2.3400	42.456			5/1/09	MD				M	******			
RR-00025	C	-0017	1	7.	2.3438	52.150		KO	5/1/07	ND				ND				
RR-00027	C	-0018	1	<u> </u>	2.3724	40.4998		KB	5/1/09	ND				ND				
RR-00028	C	-0019		NOT	2.3525	47.8047		KB	5/1/09	ND				ND				

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Page	 of	

Calculated automatically in the "Electronic Data Entry" form. Do not enter data here.

		Chrysotile (C)	Asbestos		Γ			Comments
	C Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of C + Container (mg)	Mass (mg) C	% LA	% OA	%с	(see Notes below)
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RR-00016	100							
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RR-00019	ND							
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# Data Log Sheet v8 for SOP SRC-LIBBY-01 Stereomicroscopic and Gravimetric Analysis of Coarse Soil

Lab Name:

EMSL27

SOP Version:

PLM-GRAV (SRC-LIBBY-01, REV.1)

Lab Job No.

270900048

			Status 1 = Analyzed	QA Type (Not QA)	Total Sa	ample Weight (g)		Analys	is Details	Mass of Asbesto  Libby Amphibole (LA) Asbestos Other Amphibole (OA) Asbe					stos Particles (mg)			
EPA Index ID	Index Suffix	Lab Job-Sample No.	2 = Missing 3 = Contam 4 = Cancelled	(10.2)	Tare Weight (g) Empty Container	Mass of Sample - Container (g)	+ Mass of Sample (g)	Analyst Initials	Analysis Date	LA Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of LA + Container (mg)	Mass (mg) LA	OA Qual* (ND, Tr)	OA Type** (AMOS, ANTH, CROC, UNK)	Tare Weight - Container (mg)	Mass of OA + Container (mg)	Mass (mg) OA
RR-00029	C	-0020		NO+	2.3223	36. <del>1</del> 803		KAB	5/1/09	ND				ND				
RR-00030	C	-0021	1		2,3076	24.0132		KB	5/1/09	ND				ND				
RR-00031	C	-0022	l	NOF	2.3433	87.7760		KB	5/1/09	ND				20				
RR 00032	(	-0025	1	WA.	2.3870	72.1193		KB	511/09	ND				ND				
RK-00033	C	-0024	l	OZF (	2.3500	45.119 (			5/1/09	ND				ND				
RR-00034	С	-0025	l	W/4	2.3273	51.4838		KB	51109	ND				ND				
RR 00035	C	-0024	l		2.3650	42.9136		KB	5/1/09					ND				
RR-00036	C	-002手	l	७४७	2.3533	16.7451		KB	5/4/09					170		,		
RR-00057	f	-0028	1	GU I	2.3175	57.1317		KB	5/4/09	ND				ND				
RR-00039	C	-0029	l	NOT	2.3775	37.5649		KB	5/4/09	ND	-			ND				
RR 000 40	12.	-0000	1	NO F QA	2.3110	42.7118		KB	5/4/09	· .				ND				
RK orogi	6	- 003.1	(	et No+	2.3704	33.3664		KB	5/4/09	ND				ND				
RP 000 12	L.	11032	l	©/₁	2.3502	41.4234		KB		ND				ND				
RK-000-13	(	-0000	1	NOT	2.3440	21.8823		KB	5/4/09	ND				ND			•	
RP-0001	(	+000		N/A	2.3136	10.6020		KB	5/4/09	כדמ				ND				
RR-OFF-HD	()	· 003/3	ĺ	NOT	2.3523	29.1622		KB	5/4/09	ND				ND				
RK not to	Ĺ.	· 6000	l	-71	2.3538	21.8010		KB	5/4/09	ND				ND				
RR-000 +7	Ç.	-0037	(	الاسكا	2.3807	28.7286		KB	5/4/09	ND				ND				
RR-000-15	(	-0000	No.	NOT	2.3279	15.7417		KB	5/4/09	ND				ND				

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Calculated automatically in the "Electronic Data Entry" form. Do not enter data here.

		Chrysotile (C)	Asbestos					Comments
	C Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of C + Container (mg)	Mass (mg) C	% LA	% OA	% C	(see Notes below)
RR-00029	ND							
RR-00030	ND							
RR-00031	ND							
RR-00032	ND							
RR-00033	ND							
RR-00034	ND	****						
RR-00035	ND		*****					
RR-00036	ND							
RR-00037	ND							
RR-00039	ND	*****						
RR-00040	ND	-24444						
RR-00041	ND							
PR-00042	ND	~~~~						
PR-00043	ND							
PR-00044	ND							~
RR-00045	ND							
RR-00046	ND							*
RR-00047	ND							
RR-00048	ND							

# Data Log Sheet v8 for SOP SRC-LIBBY-01 Stereomicroscopic and Gravimetric Analysis of Coarse Soil

Lab Name:

EMSL27

SOP Version: Lab Job No.

270900048

PLM-GRAV (SRC-LIBBY-01, REV.1)

			Status 1 = Analyzed	QA Type (Not QA)	Total St	ample Weight (g)		Analys	is Details		Libby Amphibale (	A) Achantas		······		Mass of Asbestos phibole (OA) Asbes		
EPA Index ID	Index Suffix	Lab Job-Sample No.	2 = Missing 3 = Contam 4 = Cancelled		Tare Weight (g) Empty Container	Mass of Sample + Container (g)	Mass of Sample (9)	Analyst Initials	Analysis Date	LA Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of LA + Container (mg)	Mass (mg) LA	OA Qual* (ND, Tr)	OA Type** (AMOS, ANTH, CROC, UNK)	Tare Weight - Container (mg)	Mass of OA + Container (mg)	Mass (mg) OA
RR-00050	С	-0039	l	NOT	2.3487	36.1068		KB	5/4/09	ND				ND				
RR-00051	C	-00 40	1		2.3711		1000	4	5/4/09	ND				ND				
RR-00052	C	-0041		1 1	2.3798	39.9590		KB	5/4/09	ND				ND				
RR-00053	C	-0042	(	OK PT	2.3390	79.0525			5/4/09	ND				ND				
RR-00054	C	-0043		NOT	2.3449	44.0286		KB	5/4/09	ND				ND				
RR-00055	C	-0044	1	UM	2,3755			K/3	5/4/09	ND				ND				
RR-00056	C	-0045	1		2.3666	77.8216		1	5/4/09	ND				DU				
RR-00057	C	-0046	1	1-40	2.3721	1	10.00		5/4/09	ND				ND				
RR-00058	C	-0047	į	O M	2.3579	84.4398		KB	1 -	ND				20				
RR-00059	0	-0048	(	CAM	2.3355	33.2602		KB	5/4/09	ND				ND				
RR-00060	C	-0049	1	COLL		85.8471		dr.	5/4/09	ND				ND				
RR-00061	C	-0050		NOT	2,3561	16.9061		KB	5/4/09	ND				ND				
RR-00062	0	-0051	l	GEFT	2.3492	8.2014		KB	5/4/09	ND				ND				
RR-00203	C	-0052	(	1027	23408		66131	KB.	5/4/09	NO				ND				
RR-00206	C	-0053	·		2.3469	48.5449		KB	5/4/09	ND				ND				
RR-00209	C	-0054	1	3.7	2.3464	37.0072		K/3	514/09	ND				いり				
RR-00212	С	-0055	1	1 00	2.3550	6.0377		KB	5/4/09	ND				ND				
RR-00215	C	-0056		N/A	2.3907	25.4730		KB	5/4/09	ND				ND				
RR-00218	C	-0057	-	NOT	2.3459	42.7305		KB	5/4/09	ND				ND				

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		Chrysotile (C)	Asbestos					Comments (see Notes
	C Qual* (ND, Tr)	Tare Weight - Container (mg)	Mass of C + Container (mg)	Mass (mg) C	% LA	% OA	%-С	below)
- 0	a ( 1m						////	
RR-00050	ND							
RR-00051	ND							
• • •							m	
RR-00052	ND							
RR-00053	NI)							
RR-00054	ND							
RR-00055	ND							
	· · · · · · · · · · · · · · · · · · ·							
RR-00056	NB							
RR-00057	ND							
RR-00058	ND	****						
RR-00059	ND							
RR-00060	ND							
KK-00000		******						
RR-00061	ND							
RR-00062	ND							
•								
RR-00203	ND							
RR-00206	ND							
RR-00209	ND							
RR-00212	ND							
RR-00215	MD							
RR-00218	MO							

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	Microscopy		
Client:	Logged:	TAT:	
Address:	Date/Time Due:		
	Special Instru	ictions	

Fax: PLM-GRAV (SRC-Libby-01, Rev. 1)

Order Number 270900048

			Г			OMPON	ENT TY	PES				MICRO	OSCOPIC	
Macros		Tre	atment	Asbesto	os	Fibr	ous		Non-Fib	rous		Optical	Propertie:	
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou	7 Black 8 Silver 10 Pellow 7)	3 Di 4 As: 5 He 6 Me	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	Wavy     Straight     Uniform Diamet     Ribbou-Like     Tepered Ends     Pleochroism (P)     Yes     Yes     Yes     Yes     Yes	9. Exotic 5 10. Other Birefringenese 6 1 Low: 0.010 2 Med 0.010-0.050 3 High >0.050	1. + 2 3. Variable Shape  Fiber Color (Fi 1 White 2 Brown 3 Seige	Parallel     Symmetrical     Oblique
		Treat	Stereo Asbesto Est. %	S Asbestos Type	% of Asbesto	Fit	ther crous %	Non-	Fibrous %	Non-Asb Char. Ex. E4		Optical	Properties	4. Undulore
	(0) 3			ND	0	***************************************		20	100			⊥ R.I.		R.L
RR-00001	(T) 2	•	0									М		s
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	(H) 2			,							Р	В	(FC)	E
	(CB)7,11		_	ND	0			20	100			⊥ R.i.		∦R.I.
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	(H) 2										Р	В	(FC)	E
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KN	(H) 2	1	$\mathcal{O}$	-		+		$\vdash$			P	В	(FC)	E
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VK-00014	(H) Z		V			-		<b> </b>			P	,	(FC)	E
L	10.A 12"					1		<u> </u>			<u> </u>		l''-C'	

11.00		1100 -1.1.1			
Analyst: KBamle	Date:	4/30-5/1/09 Computer:		Date:	
Room Temp (C): 20.2		EMSL Analytical	inc.		PLM7.9.

PLM7.9.0

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# Ashestee Analysis of Bulk Materials via EPA 600/R-95/110 Method using Polarized Light

Client:	Logged:	TAT:	<del>QC</del>
Address:	Date/Time Due:		
Fax: Project: PLM-GRAV (SRC-Libby-01, Rev. 1)	Special Instruction		Order Number 270900048

			Γ		(	COMPON	ENT TY	PES				MICRO	SCOPIC	
Macros	copic	Tre	eatment	Asbesto	os	Fibr	ous		Non-Fib	rous			Properties	š
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou TEXTURE 1 Fibrous 2 Non-Fi	7 Black 8 Silver s 9 Blue 10 Yellow	2 Cr 3 Di 4 As 5 He 6 Me	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite	e	7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	sum Carbona ix ite	te	Streight     Uniform Disense     Ribbon-Like     Tepernal Enda     Plenchroism (P)     Yea     No	orphology (M) 6. Sosied 7. Pitted er 8. Medella 9 Exolic S 10. Other Birefringen ouc ( 1 Low: 0.010 2 Med 0.010-0.050 8 Nigh > 0.030 8 None 0.00 e Irote	1. + 2 3. Variable hape Fiber Color (FC 1 White 2 Brown 3 Beige	C) Extinction (E) 1. Parellel 2. Sympostrical 3. Oblique 4. Undulore
HOMOGENEIT 1 Homogeneous 3	Y (H) OTHER		Stereo Asbesto Est. %	s Asbestos	% of Asbesto	Fil	other brous		Fibrous	Non-Asb Char.		A problem	5 Green 6 Colories	
Sample	Macrosc.	Treat	2011 70	Type	ļ	s Type	<u>%</u>	Туре	% li ~::>	Ex. E4		Optical R.L	Properties	S    R.I.
RR 00018	(C) 3 (T) 2	l	0	ND	0			20	100			М		S
	(H) 2										P	В	(FC)	E
RR-00019	(C) 3 (T) 2	i	0	ND	0		A political to	20	00			⊥ R.I. M		R.I.
KK 05	(H) 2	-	1			+		-			P	<del>,,,</del>	(FC)	E
					~				100.00			⊥ R.I.	(rc)	R.I.
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	(C) 3			ND		*200,630		20				R,I.	,	R.I.
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RR-00023	(T) Z	(	0									М		S
	(H) Z										P	В	(FC)	E
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	(C) 3			ND	O	100000	**********	20	100			⊥ R.I.		R.I.
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200	(C) 3	-		ロロ	0	\		20	100			⊥ R.I.		JJ R.J.
RR-00028	(T) 2,	Ċ	0					<u> </u>				М		S
	(H) 2						<u>'</u>				P		(FC)	Е
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	(H) 2										P	В	(FC)	E

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Room Temp (C): 18.6		Ei	MSL Analytical, I	nc.		PLM7.9.0

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Client:
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Fax:

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Date/Time Due:

**Special Instructions** 

Order Number 270900048

Project: PLM-GRAV (SRC-Libby-01, Rev. 1)

			Γ		C	OMPON	ENT TY	PES				MICRO	OSCOPIC	
Macros			atment	Asbesto	os	Fibr			Non-Fib	rous			Properties	
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou TEXTURE (	7 Black 8 Silver s 9 Blue 10 Yellow	3 Di 4 As: 5 He 6 Me	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	cum Carbona :ix .ite	te .	2. Straight 3. Uniform Diame 4. Ribbort-Like 5. Tapened Ends Picochroism (P) 1. Yes	9, Exect 10. Other Birefringeness 1 Low. 0.010 2 Med 0.010-0.059 3 High > 0.050	Shape:    Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Shape:   Sh	Perallal     Symmetrical     Oblique
1 Fibrous 2 Non-Fi  HOMOGENEIT 1 Homogeneous 3 2 Heterogeneous 4  Sample	Y (H) OTHER Lavers (#) Macrosc.	Treat	Stereo Asbesto Est. %	1	% of Asbestos	Fil	other prous %	Non-l	Fibrous %	Non-Asb Char. Ex. E4			Properties	4. Undutesc
RR-00030	(C) 3 (T) Z	1	0	UD	0			20	100			⊥ R.I.		R.L.
	(H) Z	,									P	В	(FC)	E
RR-00031	(C) 3 (T) 2		Α.	ND	0	1,000E-1ERMS		20	100			⊥ R.L M		[ R.L
KK200031	(H) 2	1	Ò			<del> </del>		ļ	ļ		P	Тв	(FC)	S E
				1 5 5 5		-			8.0				(FC)	li R.L
RR-00032	(O) 3	,	0	ND	0		,	20	100			M		S S
KKOOOSA	(H) Z	·	U								P	В	(FC)	E
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	(H) Z										. P	В	(FC)	E
	(C) 3		^	S	0	*****		20	100			⊥ R.I. M		R.I.
RR-00035	(T) 2	(	D	-		-					P	В	(FC)	S E
				41.70					1.03		•		(FC)	IJ R.J.
00 000210	(i) 3 (ii) 2	,	$\mathcal{O}$	ND	0	· CERTIFIC		20	100			М		S S
RR-00036	(H) Z	'									P	В	(FC)	E
	(i) 3			UN	0	-		20	100			L ⊥ R.I.		R.I.
RR-00037	m 2	.	0	10.15			·		100			М		s
[ ·	(H) 2	١									P	В	(FC)	E
···	(C) 7			DU	U	*enq		20	100			⊥ R.I.		IJ R.I.
RR-00039	(T) Z		0									М		s
e el marchina	(H) Z										P	1	(FC)	E
10 -10	(C) 3 (T) 2			DN	0	Acceptance	-	20	100			⊥ R.I.	·	II R.I.
RR-00040		1	$\mathcal{O}$									М		S
	(H) 2				,						P	В	(FC)	E

Analyst: _	Charnes	Date:	5/174/09	Computer:		Date:	
Room Tem	p(C): 20. 1		E	MSL Analytical,	Inc.		PLM7.9.0

# Ashertes Analysis of Bulk Materials via EPA 600/R-95/110 Witthod using Polarized Light



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Client:	Logged:
Address:	Date/Time Due:

Special Instructions

Order Number 270900048

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TAT:

PLM-GRAV (SRC-Libby-01, Rev. 1)

Fax:

				(	COMPON	ENT TY	PES		_		MICRO	OSCOPIC	
Macros	<u> </u>	Treatmen		tos	Fibr	ous		Non-Fib	rous			Properties	
COLOR (C 1 Brown 4 White 2 Gray 5 Red 3 Tan 6 Variou	7 Black 8 Silver s 9 Blue 10 Yellow	1 Teased 2 Crushed 3 Dissolve 4 Ashed 5 Heated 6 Melted	1 Chrysotile 2 Amosite 3 Anthophylli 4 Tremolite 5 Actinolite 6 Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	2. Straight 3. Uniform Diame 4. Ribbon-Like 5. Tapered Ends Pleachroism (P) 1. Yes 2. No	9. Exotic 5 10. Other Birefringenese 6 1 Low: 0.010 2 Med 0.010-0.050 3 High >0.050	Shape    Shape   2.     Nariable     Shape       Fiber Color (FC     White     2. Brown     3. Beige	Panellel     Symmetrical     Oblique
	Y (H) OTHER Lavers (#) Macrosc. T	Ster Asbe Est.	stos Asbestos 7 Type	Asbesto	Fil	other prous %	Туре	Fibrous	Non-Asb Char. Ex. E4			Properties	
RR-00041	(C) <b>7</b> (T) <b>2</b> (H) <b>2</b>		)   ND	0			. 20	100		P	R.I. 	(FC)	R.i. S
RR-00042	(C) 3 (T) 2	0	ND	. 0			20	100			⊥ R.I.		R.I.
	(H) 2 (C) 3		ND	D			20	100		P	B ⊥ R.I.	(FC)	E    R.i.
RR-00043	(T) 2 (H) 2	( (						107		P	M B ⊥ R.J.	(FC)	S E [[ R.I.
RR-00044	(T) 2 (H) 2	0	ND	0			20	100		P	М	(FC)	S E
RR-00045	(C) 2 (T) 2 (H) 2	C	04	U			20	100		P	⊥ R.I. M	(FC)	R.I. S
RR-00046	(C) 3	, 0	UD	O	lance	-	20	100			⊥ R.I.	(10)	R.I.
00 1112	(H) 2 (C) 3 (T) 2		ND	O			20	100		P	B . ⊥ R.I.	(FC)	E    R.I.  S
RR-00047	(H) 2 (C) 3		ND					100		P	 B ⊥ R.i.	(FC)	E    R.I.
RR-00048	(T) 2 (H) 2	0		0			20	,,,,		P	М	(FC)	S
RR-00050	(C) 3 (T) 2 (H) 2	0	ממ	0		-	20	100		P	⊥ R.I. M	(FC)	∦R.I. S
KR-00051	(C) 3 (T) 2	, C	ממ	D			20	100			⊥ R.J.		II R.I.
1110	(H) 2	<u>'</u>								P	В	(FC)	E

Analyst: KBarnes Date	5/4/09 Computer:	Date:
Room Temp (C): 19.6	EMSL Analytical, Inc.	PLM7.9.0

# Ashertes Analysis of Bulk Materials via BP 1 600/R-95/110 Method using Polarized Light

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Client:	Logged:
Address:	Date/Time Due:

Special Instructions

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TAT:

270900048

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PLM-GRAV (SRC-Libby-01, Rev. 1)

				COMPONENT TYPES						MICROSCOPIC				
Macroso	copic		atment	Asbestos Fibrous Non-Fibrous					Optical Properties					
COLOR (C)  1 Brown 4 White  2 Gray 5 Red  3 Tan 6 Various  TEXTURE (7)  1 Fibrous 2 Non-Fil	7 Black 8 Silver s 9 Blue 10 Yellow	2 Cr 3 Di 4 Asi 5 He 6 Me	ushed 2 ssolve 3 hed 4 ated 5	Chrysotile Amosite Anthophyllit Tremolite Actinolite Crocidolite	e	7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quar 15 Mica 16 Gyps 17 Cal. 18 Matr 19 Perl 20 Othe	um Carbona ix ite	te	Morphology (04)		(B) Fiber Color (FO 1 White 2 Brown 3 Beige tropic 4 Blue	Elongation (S)  Extinction (E)  I. Parallel  2. Symmetrical  3. Obligation  4. Undulose
HOMOGENEIT			Stereo Asbestos Est. %	Asbestos Type	% of Asbesto	Fil	ther prous		Fibrous	Non-Asb Char.			5 Green 6 Celorices	in S
Sample		Treat		1	<b></b>	S Type	<u>%</u>	Туре	%	Ex. E4	<b> </b>	Optical R.I.	Properties	
DO DONES	(C) 3		0	ND	0			20	100			. М	ļ .	R.I.
RR-00052	(H) 2					-		ļ	-		P	В	(FC)	E
	(C) 3			ND	0			20	100			⊥ R.I.		R.I.
RR-00053	(T) 2	1	D									М		S
	(H) Z										P	В	(FC)	Е
	(C) 3			ND	0	-		20	100			⊥ R.i.	ļ	[[R.I.
RR-00054	(T) 2		D								P	В	(FC)	S E
	(c) 3			ND	0		anguarian .	20	100			⊥ R.I.		II R.I.
RR-00055	m 2	ĺ	0	100					,			М		S
KIC-00033	(H) 2	١									P	В	(FC)	Е
	(C) 3			STO	0	<b>200</b>		20	100			⊥ R.L		R.I.
1610 1	(T) 2	(	0									М		S
	(H) <b>2</b> _										P	В	(FC)	E
	(C) 3		_	ND	0	A.777		20	100			⊥ R.I.		R.I.
RK-00057	(T) 2	1	0		•							M		S .
	(H) Z										P	B ⊥ R.I.	(FC)	E
RR-00058	(C) 3			ND	0			20	100		<u> </u>	M		II R.I.
KKLOWSO	(H) 2	1	D						-		P	В	(FC)	E
	(c) 3			ND	O			20	100			⊥ R.I.	1 2	R.I.
RR-00059	(T) Z	,	0	را ال		+			100			М		s
• ''	(H) 2	l									P	В	(FC)	E
	(C) 3 (T) Z			ND	0			20	100			⊥ R.I.		R.I.
RR-00000		(	0									М		s
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	(C) 3			ND	0			20	100			⊥ RJ.		R.I.
RR-00061	(T) 2	l	0									М		S
	(H) Z										P	В	(FC)	E

Analyst: Barnes Date:	<b>94</b> 9 Computer:	Date:	
Room Temp (C): 21.0	EMSL Analytical, Inc.		PLM7.9.0

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PLM-GRAV (SRC-Libry-01, Rev. 1)

Special Instructions Order Number

270900048

			COMPONENT TYPES					MICROSCOPIC					
Macroscopic	Treatmer	it	Asbestos Fibrous Non-Fibrous				Optical Properties						
COLOR (C)  1 Brown 4 White 7 Black 2 Gray 5 Red 8 Silver 3 Tan 6 Various 9 Blue 10 Yellow  TEXTURE (T) 1 Fibrous 2 Non-Fibrous 3 Other	1 Teased 2 Crushed 3 Dissolve 4 Ashed 5 Heated 6 Melted	2 # 3 # 4 1 5 #	Chrysotile Amosite Anthophyllite Tremolite Actinolite Crocidolite		7 Cellul 8 Glass 9 Min. W 10 Synthe 11 Other 12 Wollas 13 Hair	ool tic	14 Quartz 15 Mica 16 Gypsum 17 Cal. Carbonate 18 Matrix 19 Perlite 20 Other		te	2. Streight 3. Uniform Diame 4. Ribbon-Like 5. Tapered Ends Pleachroism (P) 1. Yes 2. No	orphology (M) 6. Sosied 7. Pitted 8. Medulla 9. Exotic Si 10. Other Birefringeness (E. Lowe: 0.010 2. Med 0.010-0.050 3. High >0.050 4. None 0.00 or bein	1. + 2 3. Variable ispo 1) Fiber Color (FC) 1 White 2 Brown 3 Brige 4 Blue	Estinction (E)  1. Parallel 2. Symmetrical 3. Oblique 4. Unitalions
HOMOGENEITY (H) 1 Homogeneous 3 OTHER 2 Heterogeneous 4 Lavers (#)	Ste Asbe	stos	Asbestos Type	% of Asbesto	Fit	ther prous		ibrous	Non-Asb Char.	6	9.5	5 Green 6 Coloricas	
Sample Macrosc. Tr	eat				Type	<u>%</u>	Туре	% 	Ex. E4		Optical R.I.	Properties	R.I.
RR-00062 (T) Z			DU	0			20	100		P	М	(FC)	s E
(0) 3			· 100m.			agin a 1 managan		0.50			⊥ R.I.	(10)	R.I.
100 2000 100 77	.   ^		ND	0			20	100			M		S S
(H) 2		)			-					P		(FC)	E
			4 1500	ව				100			⊥ R.I.	(1-0)	Į R.I.
RR-00206 (T) 2	i   C	,	ND	<u> </u>			20	100			M		S
(H) 2										P		(FC)	E
			. 30-00-					.05			⊥ R.I.	(FC)	
1 1 1			SD	0		-	20	100			M		II R.I.
RR-00209 (T) 2		0								P		(50)	S E
							<u> </u>			•	⊥ R.L	(FC)	
(0) 3			20	0	*40000		20	100			M		R.I.
RR-00212 (T) 2 1	0	•						,		· P	,		S E
1~				-5%	-			~~1		*	B ⊥ RJ.	(FC)	
(0) 3			00	0	_	-	20	(00)					R.I.
RR-00215 (7) 2 (H) 2	10						<u></u>				М	<del></del>	S
							<u> </u>			P		(FC)	E
(0) 3			ND	<u> </u>			20	100			⊥ R.I.		R.I.
RR-00218 17 2		)					ļ				М		S
(H) 2										Р	l	(FC)	E
(C)							20				⊥ R.I.		R.I.
The second second											М		S
(H)										P		(FC)	E
(C)			The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa	KR			20				⊥ R.I.		R.I.
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KBarnes Date: 5/4/09

Computer:

EMSL Analytical, Inc.

Date:

PLM7.9.0

# Calibration Of Common RI Oils

Date: 4/17/09

Ri	Oil	CARGILLE G	RGILLE GLASS		CENTRAL STOP DS		CENTRAL STOP DS		CENTRAL STOP DS					
N _D	Lot#	Labeled RI	Lot#	DS Color	λο	dN _D /dt	T _R	N _x	N _D -N _X	Accept or Reject				
1.550	13619HI	1.550	С	BLUE	600	4.91E-04	19.0	1.549	0.001	ACCEPT				
1.605	0701	1.600	В	BLUE	620	4.41E-04	19.1	1.601	0.004	ACCEPT				
1.680		1.680	С	BLUE	600	4.75E-04	19.1	1.677	0.003	ACCEPT				
1.700		1.700				4.80E-04			1.700	REJECT				

From Su (1996) RI Oil Conversion Tables Temperture Corrected

 $N_D = The \ Refracted \ Index \ the \ Manufacturer \ Calibrated \ for \ the \ Oil \ At \ 25^0 \ C$ 

 $\lambda_0$  = Associated wavelength of observerd Dispersion Staining Color (from McCrone color chart)

dn_D/dt=The Change in Refractive Index per Degree Celsius from RI Oil bottle

T_R=Room Temperature at the Time of the Calibration in °C

N_X=The Refractive Index Measured During Calibration

Analyst:

Signature / Date

# Calibration Of Non Common RI Oils

Date:

4/17/09

	RI OII Cargille Glass Central Stop Dispersion Stai								ining		
Labeled N _D	Lot#	dn _D /dt	n _F -n _C	Lableled RI	Lot#	n _F	n _c	DS Color	λο	K _D	T _R ℃
1.625	0807	-4.52E-04	0.0275	1.625	В	1.63824	1.62065	Purple	589	0	19.0
	Fr	om RI Oil Bott	le			argille Glas	s Charts Bead Set)		From	su (2002)T	able 2

RIC	Dil	Calculated Values								
Labeled N _D	Lot#	n _D liq	N _{CORR}	Labaled N _D -N _{Corr}	Accept or Reject					
1.625	0807	1.625 1.622 0.003		0.003	ACCEPT					

Labeled No=The Refracted Index the Manufacturer Calibrated for the Oil At 25° C

dn_D/dt=The Change in Refractive Index per Degree Celsius

Oil  $n_F$ - $n_C$  = Dispersion Coefficient of RI Oil

Solid n_F-n_C = Dispersion Coefficient of Cargille Glass used

 $\lambda_0$  = Associated wavelength of observed Dispersion Staining Color (from McCrone Color chart)

 $K_D$  = Coefficient determined for matching DS wavelength

T_R°C = Room temperature at time of calibration in °C

n_D liq =The Refractive Index Measured During Calibration

N_{Corr}=The Refractive Index After Temperature Correction Of N_D liq

Analyst:

Marnes 5/13/00

Signature / Date